

# COMPUTERWORLD

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## Shake-up at IBM redraws lines of power

**Product groups shuffled; divisions gain day-to-day control**

BY ALAN ALPER  
OF STAFF

**NEW YORK** — Seeking to brighten its future after three lackluster years, IBM last week transferred key product design, manufacturing and marketing decisions to five independent business units.

### Lautenbach on Blue streak

BY CLINTON WILDER  
OF STAFF

Terry R. Lautenbach's elevation to general manager of IBM United States last week surprised many observers, but his IBM career path has been a familiar one for many of Big Blue's highest ranking executives. And he is Blue to the core, logging nearly 30 of his 49 years in an IBM suit.

Like Chairman John Akers and others, the silver-haired Lautenbach rose through the giant company's marketing ranks to several key management posi-

*Continued on page 89*

Decentralizing decision-making authority for its domestic manufacturing and development operations from its corporate management committee to the executives heading up the new units will, IBM hopes, enable the \$55 billion lumbering giant to expedite product development and react more quickly to customer demands.

The five business units are grouped around key product

lines: 370 architecture systems, System/36 and 38 machines,



personal systems, communication systems and technology products (see chart below).

The executive overseeing each unit will be accountable for product line revenue and profitability and will be responsible for worldwide product development as well as domestic manufacturing.

"I've felt for a long time we needed a more responsive, better organization," IBM Chairman John Akers said during a press briefing at IBM regional

*Continued on page 89*

### Lined up for business

With reorganization of its U.S. operations, IBM places various product divisions on a par with its mainframe operations



OF STAFF

## \$80M MIS disaster

BY DAVID A. LUDLUM  
OF STAFF

**SAN FRANCISCO** — BankAmerica Corp. is scuttling efforts to use its trouble-prone Master-net institutional trust accounting system, which has been five years in the making and cost an estimated \$80 million.

The banking company recently disclosed that it will shift the processing for 95% of its institutional trust accounts — believed to represent about 75% of total transactions — to its Seattle Corp. subsidiary in Seattle. The transfer will take place in mid-April, according to a letter Bank-

America sent to its clients.

The development appears to bring to a climax an ambitious but ultimately disastrous attempt to deploy a leading-edge

information system whose cost was initially pegged at \$20 million, according to interviews with industry sources and former BankAmerica employees.

On Jan. 21, BankAmerica revealed that, during last year's fourth quarter, it had set aside

*Continued on page 10*

## No-disk Model 50 tested

BY JAMES DALY  
OF STAFF

IBM is letting users tinker with a diskless version of its Personal System/2 Model 50 in an apparent effort to fold its proprietary Micro Channel architecture-based machines into a larger networking environment.

The company recently offered the system to customers on a custom-bid basis and may announce it as a full-blown commercial product by next month, according to one early user and an analyst familiar with the machine.

Several users of diskless

Model 50 prototypes who were contacted by Computerworld said the unit is more reliable, quieter and less expensive than its disk-based counterpart.

### MIS gains control

The diskless Model 50 also allows MIS organizations to control the data and applications that end users access from a host computer. The new model uses programmable read-only memory to tap into a local-area network through a file server, which serves as a central repository for software.

"As soon as I can get my

*Continued on page 14*

## Tower line fortified

BY ALAN ALPER  
OF STAFF

**NEW YORK** — NCR Corp. broadened the scope of its Tower family of minisuper. Unisys-based systems last week by unveiling low- and high-end systems as well as two mid-range members of the series.

At the same time, the company embellished the networking options it offers with the Tower machines. NCR introduced a file server that lets Microsoft Corp. MS-DOS-based microcomputers on a local-area network access Tower applications; a token-ring controller and Netbios; and a Transmission Control Protocol/Internet Protocol interface.

The high-end Tower 32/850, designed around the 32-bit 25-MHz Motorola, Inc. 68030 mi-

*Continued on page 14*

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## NEWS

# GAO finds NYSE systems guilty in market crash

BY MITCH BETTS  
CIVILIAN

WASHINGTON, D.C. — Stock exchange computer systems were unable to handle the tremendous volume of transactions attempted during the stock market crash last October, according to a federal agency.

In a preliminary report and testimony to a congressional panel, the U.S. General Accounting Office (GAO) suggested that regulators such as the Securities and Exchange Commission should play a role in ensuring the stock exchanges to upgrade the capacity of the systems.

Problems arose in several markets, the auditors reported, but were typified by the capacity constraints in the card printers on the floor of the New York Stock Exchange (NYSE). "As these printers became overloaded, the delays backed up into other segments of the system and then reverberated through other markets as well," the report said.

On Oct. 19, the day the Dow Jones industrial average plummeted 508 points, orders for 396 million shares were entered into the NYSE's automated transaction system — an unprecedented amount of traffic.

NYSE officials have acknowledged the problems and plan to upgrade the capacity of the systems.

A similar report compiled by the Presidential Task Force on Market Mechanisms, known as the Brady Commission, said the bottleneck resulted from a device controller through which all orders are transmitted to the printers. The controller has a capacity of 68 messages per second, which was exceeded by peak volume of 72 messages per second Oct. 19.

"The floor printers, which have a capacity of 10 to 12 print-outs per minute, were overwhelmed at times," the report said. The delays meant that market orders were executed at prices very different from those in effect when the orders were entered, the commission said.

# HP rolls out ink-jet printer

Laser-quality unit designed for desktop users

BY JAMES A. MARTIN  
CIVILIAN

VANCOUVER, Wash. — Hewlett-Packard Co. last week introduced a desktop thermal ink-jet printer said to offer laser-quality text and graphics for less than \$1,000.

The Deskjet printer, set for immediate availability, is aimed at capturing a portion of the high-end dot matrix printer market and was not designed to compete with more expensive laser printers such as HP's Laserjet II, according to Thomas R. Braun, manager of HP's research and development section.

The Deskjet reportedly is best suited for individual use, handling sophisticated word processing print jobs that incorporate graphics. The printer was not designed to handle the volumes associated with large desktop publishing or network shared-peripherals requirements, Braun added.

HP's latest printer offering is "a viable alternative to the 24-wire printer technology," said Gary Jensen, a senior industry analyst for Dataquest, Inc. "Customers want laser-quality print, and they are not particularly concerned about the technology used to produce it as long as it's as reliable as dot matrix, quiet, produces true laser-like output

and is competitively priced," he added.

The Deskjet is HP's fifth printer introduction in the last 11 months, Jensen said. "They are becoming a significant, if not dominant, player in the market," he added.


## Specifications outlined

Deskjet reportedly prints 120 char./sec. in letter-quality mode and 240 char./sec. in draft mode. The output speed is said to be 2 pages/min. compared with 8 pages/min. on the Laserjet II and other laser printers. Text resolution is 300 by 300 dots/in., which is roughly equal to that of the Laserjet II.

The printer includes courier fonts and, with the use of snap-in cartridges, can support up to 32 different fonts. It is compatible with most HP Laserjet printer-supported software packages via the HP Printer Command Language.

The Deskjet works with IBM Personal Computers and compatibles and IBM Personal System/2 models. It also works with HP's Vectra, Touchscreen, Portable Plus and HP 1000, 3000 and 9000 series departmental systems.

Retailing at \$995, the Deskjet supports a dual-interface RS-232 and Genicom Corp.'s Centronics parallel interface.



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# Prime succeeds in Computervision takeover

Transition task force to address product, personnel redundancy

BY ROSEMARY HAMILTON  
OF STAFF

Prime Computer, Inc. and Computervision Corp. put aside their weapons last week and began the arduous task of blending the two companies into a single entity.

The two Massachusetts firms signed a Plan of Merger agreement last Thursday that will make Computervision, a computer-aided design and manufacturing (CAD/CAM) systems supplier, a division of minicomputer maker Prime.

Both users and industry analysts expressed support for the deal, as they had when Prime announced its intentions to acquire Computervision in late December.

"It certainly points out that (Prime is) committed to CAD/CAM," said Steven Felton, director of computer services at The Ryan Group, an architectural firm based in Middletown, N.J., that uses Prime equipment.

## Final offer

Prime will purchase Computervision's outstanding stock at \$15 per share, which was the second and final offer Prime made in January.

Both companies said that they could not provide details of how Computervision will be brought under the Prime corporate umbrella.

The merger was seen by many as indicative of the inevitable consolidation in the CAD/CAM arena.

"I'm realistic enough now to know that to be a world leader, you have to be much bigger than Computervision is now," said Philippe Villers, co-founder of Computervision and now president of Cognition, Inc.

## CEO Henson plans team

In an interview last week, Prime Chief Executive Officer Joe M. Henson said he intends to set up

ing the transition team.

Asked if Gable will remain with the new company, Henson said he hoped so. However, he could not say if Gable would be selected to lead the Computervision division.

Industry observers, on the other hand, said they expect Gable to resign.

"I don't think Henson and Gable will work at the same compe-

## At A Glance

<b>Company</b> Prime Computer, Inc. 1984 revenue \$25.5 million Products Personal computers, minicomputers Employment 1,400 Chief executive Robert L. Gable	<b>Company</b> Computervision Corp. 1984 revenue \$25.5 million Products CAD/CAM software Employment 1,400 Chief executive Robert L. Gable
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\* Computer-aided design and manufacturing

OF STAFF

transition team that will oversee a number of task forces, which, in turn, will address both staffing and product questions.

"This is a good fit that makes sense," said Robert Herwick, a technology analyst with Hambrecht & Quist, Inc. "I think the deal is a steal. Henson should be congratulated."

Henson said he expects Robert L. Gable, CEO of Computervision, to join him in over-

see for a long time," said Craig Symons, an analyst with the Gartner Group, Inc. in Stamford, Conn.

## Layoffs possible

Henson said he did not rule out the possibility of layoffs.

"We want to treat the employees fairly," he said. "We're hoping that the areas of redundancy are handled by attrition, but that's no guarantee. It's logi-

cal that there will be duplication and elimination of job posts. But that doesn't necessarily mean layoffs."

Henson said the task force will address the product areas in which both companies currently have offerings.

In CAD/CAM software, for instance, both companies sell a version of Medusa, a product that was originally developed by Cambridge Interactive Systems Ltd. (CIS) in Cambridge, England.

In the U.S., Prime was the first to be licensed to market Medusa. Computervision subsequently bought CIS and began marketing Medusa as well. Analysts speculated that the two Medusas will be slowly merged and that customers will eventually have one Medusa available to them.

## Workstation overlap

Another product area in which there is potential overlap is CAD/CAM workstations.

Computervision sells its Caddis 4X software on a customized Sun Microsystems, Inc. platform.

Prime, meanwhile, has deals in the works with both Sun and Silicon Graphics, Inc.

Prime and Computervision began negotiating early last week after nearly a month of hostility.

But while the two companies were involved in various legal maneuvers, industry observers were saying it was just a matter of time.

"It was inevitable," commented Symons of the Gartner Group. "These deals are purely financial, not technical synergy or anything else."

## Tower

FROM PAGE 1

coprocessor, supports 512 users, four times as many as the Tower 32/400, NCR said.

With expanded networking support, the high-end Tower should enhance NCR's competitiveness in departmental computing while bolstering its presence in batch processing and small business systems markets, analysts said.

## A real performer

"You can't get this much performance from a traditional minicomputer," analyst Louis Gligio of Bear, Stearns & Co. said of the high-end Tower.

Companies like Wang with their proprietary operating systems have a hard time improving the performance of their software as fast as increasing the performance of their hardware. This shows that NCR's Unix strategy has been a good one," Gligio said.

NCR estimated that the installed base of Tower machines

is 50,000.

John Dursbach, assistant vice-president of NCR's computer systems division said the Tower's popularity revolves around the series' modular expansion capabilities and object code compatibility, which allows applications to run on all family members.

## Supports more processors

The Tower 32/850 can support six 68020-based application processors, each with 8M to 16M bytes of memory, which is two more than the Tower 32/600 software.

A new file I/O subsystem with 2M bytes of memory was designed to overcome the small-byte-record problems that plagued early production models of the 32/800 [CW, Aug. 31].

The Tower 32/850 has 40K bytes of cache and a floating-point processor and supports five internal 380M-byte disk drives. Slated for availability in the third quarter, the system lists for \$106,175.

The mid-range Tower 32/450 and 32/650 feature 25-MHz

68020s, 32K bytes of cache and 50% more performance than the Tower 32/400 and 32/600, NCR said.

A mass-storage controller supports 179M- and 380M-byte fixed drives and a 150M-byte

**YOU can't get this much performance from a traditional minicomputer.**

LOUIS GLIGIO  
BEAR, STEARNS & CO.

cartridge tape drive. A 16-channel serial I/O controller enables the Tower 32/450 to support 32 users, twice that of its predecessor, and lets the 32/650 support 64 users, 16 more than the 32/800 supports.

The Tower 32/450 lists for \$15,565, and the 32/650 is priced at \$24,915. Both systems will be available in June, NCR said.

The older 32/400 and 32/600 can be upgraded by swapping processors and storage controllers, NCR noted.

## The low end

The low-end Tower 32/200 extends 16.67-MHz 68020 technology to a system supporting four users and networked microcomputers.

The single-board system comes with 1M to 8M bytes of memory and supports 25M-, 51M- or 100M-byte 3 $\frac{1}{2}$ -in. disk drives and a 150M-byte cartridge tape drive.

The 32/200 lists for \$5,445 and is scheduled for April delivery.

The NCR File Server lists for \$1,230 and should be available in the third quarter. The NCR Token-Ring Controller and NCR Token-Ring Network, enabling a Tower to connect to a Token-Ring LAN, list for \$2,195 and \$530, respectively, and are set to be available in the second quarter.

The TCP/IP connection will also be available in the second quarter, according to the firm.

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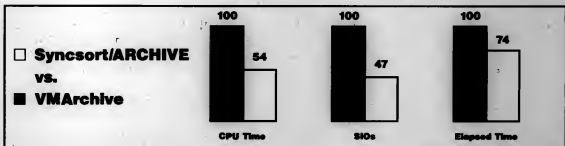
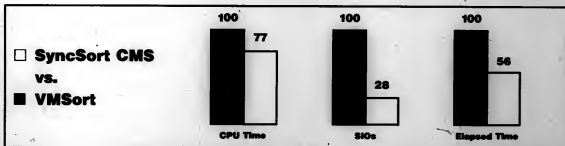
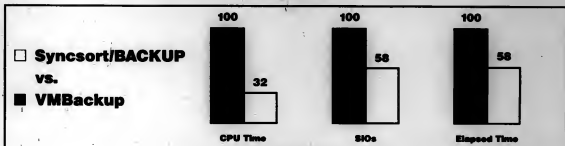
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## IBM surpasses 3725 line with 3745

### Processor strengthens firm's support for distributed networking scheme

BY ELISABETH HORWITZ  
OF STAFF

WASHINGTON, D.C. — IBM last week strengthened the ability of its communications processors to support its unfolding distributed networking scheme.

The company announced a long-expected addition to its communications processor family that reportedly packs four times the punch of the existing 3725.

IBM also brought out enhanced versions of the Advanced Communications Function/Network Control Program (ACF/NCP) software that it said adds greater flexibility and peer-to-peer networking to its communications processors. One eagerly awaited feature is dynamic network reconfiguration, which lets users add or delete communications processors, hosts or lines without having to take down the IBM Systems Network Architecture (SNA) network.

The 3745 eliminates several long-standing limitations of the earlier 3725 high-end model and provides far more cost-effective communications processing power, according to IBM.

Among the reported advantages are the following:

- Support of up to 16 host channel connections, compared with six for the 3725.
- Support of up to eight active T1 lines, instead of just one. This can eliminate for some companies the need to install an additional box, such as IBM's 3737 or Network System Corp.'s Hyperchannel, to handle high-speed communications between hosts, said Robert Graham, vice-president and manager of the IBM Systems Support group at

Bankers Trust Co. in New York. Backup capabilities are provided by the second processing unit, which can be automatically activated by a network alert sent to the Network management system, according to Donald Casey, vice-president for hardware development at IBM's Communication Products Division.

The 3745's superior processing power also makes it a far more viable gateway between

envisions the device as a high-speed LAN-to-LAN bridge.

IBM's new ACF/NCP releases will allow IBM communications processors to deliver several key-entry networking features that the vendor announced last June, according to Ellen Hancock, vice-president of IBM's Communication Products Division. The new Version 5 supports the 3745 and existing 3720 processors; the enhanced Version 4, Release 3 supports

### Front of the line

IBM's 3745 communications processor cuts into some advantages that NCR Comen's 5660 has over the older IBM 3725

	IBM 3745 Model 410	IBM 3725 Model 1	NCR Comen 5660
Maximum number of lines	512	256	1,024
Maximum number of concurrently active T1 lines	8	1	3 to 3
Maximum main storage	8M bytes	3M bytes	16M bytes
Maximum number of internal processors	2	1	1
Maximum number of token-ring connections	8	8	None
ACF/NCP	Version 5, Release 1, 2	Version 4, Release 3	Version 4, Release 2
Base price	\$198,000	\$299,940	\$318,000

\* IBM Advanced Communications Function/Network Control Program

OF STAFF

hosts and IBM Token-Ring networks, IBM and industry sources agreed. Users and analysts have complained that the 3725 bogs down as a conduit between a host and a rapidly growing local-area network.

In contrast, the 3745 "can certainly achieve a 1M b/sec throughput" either as a gateway between a LAN and a host or between multiple LANs, Casey said, thereby indicating that IBM

the 3725. Enhancements include the following:

- Support of IBM's SNA 2.1, so devices running the peer-to-peer networking protocol can communicate across an SNA backbone of processors without having to go through the host for each interaction.
- Dynamic network configuration and updates of SNA tables without the need to interrupt network operations.

• Multidrop networking, which allows multiple communications processors to share the same dedicated line.

The one processor 3745 Model 210 is scheduled to ship in March, with prices beginning at \$125,000. The dual-processor Model 410 costs up to \$1.3 million for a top-of-the-line model.

Scheduled for shipment beginning in September, ACF/NCP Version 4, Release 3 has an initial license charge of \$2,085. One-time charges for ACF/NCP Version 5 range from \$14,400 to \$72,000, depending on the system. Version 5, Release 1 began shipping last week, with other releases planned for later this year.

Increased availability for the 3745 will be crucial if it becomes a backbone system supporting peer-to-peer connections between IBM and non-IBM devices, rather than just a front end attached to a single host, according to Thomas Nolle, president of Haddonfield, N.J., consulting firm CIMI Corp.

One way that IBM has fitted the 3745 for the role described above is by adding support for the device to its SNA X.25 interconnection, a program that allows an SNA backbone of communications controllers to support X.25 packet-switching communications between both IBM and non-IBM devices, Casey said.

Of particular interest to Bankers Trust's Graham was IBM's introduction of the Network Asset Management program, which allows IBM client controllers to send to a host data base information about serial number, machine type and port number of all attached devices.

The program reportedly will be available without charge as an enhancement to the IBM 3174 Subsystem Control Unit Configuration in the second half of this year.

The new I/O subsystem, consisting of 16 slots, attaches to all System/88 family members. It supports RS-232, 422 and 423 communications and can be modified by customers who need to attach devices with unique protocols, IBM said.

**Available in fourth quarter** Slated for availability in the fourth quarter, the subsystem lists for \$11,000.

IBM also rolled out new 8-in. direct-access storage devices with capacities of 151M, 320M and 781M bytes for the entire System/88 family. Offering 34 times more capacity than are available previously, the drives are priced at \$10,600, \$15,200 and \$25,200, respectively.

The 151M- and 781M-byte drives will be available in the second quarter, while the 320M-byte drive is set to ship in the third quarter, IBM said.

## Phoenix's BIOS to run on Dell PCs

BY ED SCANNELL  
OF STAFF

AUSTIN, Texas — Dell Computer Corp. and Phoenix Technologies Ltd. this week will announce that they have agreed to jointly develop a series of BIOS products for Dell's existing line of IBM-compatible systems and for an IBM Personal System/2-compatible system, sources said.

Dell will not retrofit Phoenix's BIOS for people now using Dell's IBM Personal Computer AT- and XT-compatible systems, rather, the company will ship the BIOS with all of its new AT- and XT-compatible systems, starting with the Intel Corp. 80286-based System 200. A Dell spokesman declined to say specifically why the company has decided to switch from its

**WE HAVEN'T** been getting a lot of demand for Micro Channel systems."

JOHN ELLETT  
DELL COMPUTER CORP.

own to Phoenix's BIOS.

"We have always strived for highly compatible machines and, for various reasons, have decided to go with Phoenix on the System 200," said John Ellett, a program manager at Dell.

Asked about plans to develop a BIOS for IBM's PS/2 series, Ellett and a Phoenix spokesman declined to comment. "We haven't been getting a lot of demand for Micro Channel systems," Ellett said. "What we have seen is [demand for] the optional 386-in. drive, IBM Video Graphics Array compatibility and OS/2 compatibility. So that is what we did with the System 200."

Dell will wait until there seems to be sufficient demand from customers before it commits to developing an IBM Micro Channel architecture product, Ellett said.

Dell uses chip sets from Western Digital Corp. in its existing line of systems. Western Digital is one of two chip makers that have announced chip sets that allow systems manufacturers to put together a Micro Channel work-alike.

Dell and Phoenix have been working together for several months, according to one source.

## IBM's System/88 line enhanced by Stratus

BY ALAN ALPER  
OF STAFF

NEW YORK — Following its OEM supplier's lead, IBM last week unveiled two new low-level members of its System/88 fault-tolerant systems family and a new I/O subsystem, featuring programmable communications adapters to support specialized protocols.

Supplied by Stratus Computer, Inc., the new System/88s are aimed at customers who need high-availability systems for smaller on-line transaction processing loads, IBM officials said.

Other than IBM packaging and minor specification changes relating to printer support and use of an IBM microconverter as a console, the new System/88s are essentially identical to the

processors unveiled recently by Stratus [CW, Jan. 25], noted William Osborne, fault-tolerant systems manager of IBM's Communication Products Division.

### Supports 40 ports

The IBM 4578 comes in 8M- and 16M-byte configurations, with four duplexed Motorola, Inc. 68010 microprocessors, and can support one I/O processor and 40 communications ports.

They reportedly offer comparable performance at lower prices than the existing entry-level 4576 Model 81 and are packaged in smaller 36-in. high cabinets. The two processors are priced at \$50,300 and \$83,000, respectively, IBM said.

The 4579 is being offered in four models: two 8M-byte and

two 16M-byte configurations, with support for up to 96 communications ports. The configurations are differentiated by processor speed; two are powered by four duplexed 68010 microprocessors, the other two by four duplexed 68020s.

Packaged in 54-in. cabinets, all 4579s, save the 68010-based, 8M-byte version, reportedly can support an additional I/O processor. The processors range in price from \$43,000 to \$109,000, IBM said.

The new processors are scheduled for availability in the fourth quarter and reportedly will be accompanied by Release 5 of the System/88 OS operating system. The 4578 and 4579 can be upgraded within processor class but not to current family members, IBM noted.

## Limits temper corporate OS/2 plans

BY STEPHEN JONES  
ON STAFF

IBM's OS/2 Standard Edition Release 1.0 still appears to be more of a technical curiosity than an operating system workhorse and is likely to remain an outsider in MIS circles, according to users contacted by *Computerworld* last week.

Reports of compatibility problems with some existing hardware and software and a lack of OS/2-specific applications have led many MIS shops to buy only one or two copies of the package. Few have plans for widespread implementation.

Among MIS managers, however, interest in OS/2 shows no signs of flagging, and early limitations are not changing corporate purchasing plans for the graphics-based Presentation Manager version of OS/2 expected in the fall.

### It's not in there

"Most of the technical people in the company will work with it, but we're in no rush to embrace OS/2," said Phillip Gordon, manager of office systems at Charles Schwab & Co. in San Francisco.

"There is nothing inherent in OS/2 that users can take advantage of," said

Amy Wohl, president of Wohl Associates, a Bala Cynwyd, Pa., consulting firm, said it took her staff and a battery of technical engineers from a local dealer four days to install Standard Edition 1.0 on an IBM Personal System/2 Model 60. An incompatible mouse driver was finally identified as the source of the problem.

Wohl said such difficulties will be hard to avoid until additional support staff in the dealer channel becomes more familiar with the operating system.

"It's the usual breaking-in period. But OS/2 is complicated enough that the breaking in will take longer than it

should," she said.

Schwab was forced to sit on its copy of OS/2 for a month because the PS/2 Models 50 and 60 did not have the 2M bytes of memory needed to support the system, Gordon said. The company only recently installed an IBM memory card on one of its PCs to handle the OS/2 load.

### **Lack of communication**

The inherent limitations of the product have slowed its acceptance in other MIS shops as well.

The Travelers Corp. in Hartford, Conn., voted to keep Standard Edition 1.0

off of its approved product list because it cannot support communications and network products, such as those that run under IBM's Token-Ring network.

"It can't be a product for us now because of the lack of communications support," said Ron Calabrese, a software manager for The Travelers.

Microsoft and IBM are quick to point out that most of these problems will be resolved in later releases, such as Extended Edition.

Developers admit that OS/2 takes longer to install than DOS because of its increased functionality, but some users said OS/2 is easier to boot than its predecessor. Calabrese said the system almost boots itself through a partially automated loading procedure.

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**W**E haven't figured out what we'll do with it yet."

**RICK HEIDEN**  
**GENERAL ELECTRIC CO.**

Rick Heiden, a software engineer in General Electric Co.'s Corporate Information Technology Group. "We haven't figured out what we'll do with it yet."

Heiden said his group is more interested in getting its hands on the Presentation Manager. While GE has 40,000 personal computers, Heiden's group has bought only two copies of OS/2.

Even Microsoft Corp., which co-developed OS/2, seems to have trouble mastering much seal over the system.

"OS/2 1.0 will be [made] obsolete by 1.1 Presentation Manager — that will be the real base for the next generation of personal computing," said Mark Mackaman, Microsoft's OS/2 product manager.

On the slipcase of OS/2 Standard Edition 1.0, IBM states that it will not support the product after Jan. 15, 1989, apparently turning its attention to Standard Edition 1.1 and Extended Edition 1.0, both of which are slated to ship before that date.

This does not seem to be stopping users from at least trying their hand at the product. John McCarthy, a consultant with Forrester Research, Inc. in Cambridge, Mass., estimated that 235,000 copies of OS/2 will be sold this year. Only 10% of those will include the Presentation Manager.

Some users who have tried OS/2 related a variety of mishaps.

**Incompatibility with existing hardware and software is one of the greatest obstacles. Non-IBM add-in boards, incompatible mice and printers and nondocumented software programs have caused some of the biggest problems.**

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# Users ahead of Apple-DEC deal

BY JULIE PITTA  
OF STAFF

MIS users already connecting Apple Computer, Inc.'s Macintosh personal computers to Digital Equipment Corp.'s VAX minicomputers appear unimpressed by Apple and DEC's recently announced alliance.

The companies' agreement to jointly develop products allowing Macintoshes to communicate more efficiently with VAXs merely represents the recognition of an existing phenomenon, users said. Further, they added, a few pieces are missing in the Mac-to-VAX puzzle.

"We've been connecting Macintoshes to a lot of things: VAXs, IBM mainframes and Crays," said W. R. Magner, program analyst for Chevron Corp.'s field research department. "Connecting Macs to VAXs is only with synchronous terminal links. I really haven't heard much concrete about the DEC-Apple deal. It needs more meat."

## Message to MIS

Apple officials said the companies' new relationship results in an important message to MIS. "It's a reflection that Apple wants to work with MIS people," said George Everhart, Apple's director of corporate marketing. "One of the major catalysts was our customer base. They kept asking us, 'When are you going to do something?'"

As a vehicle into MIS, Apple has been targeting DEC accounts, a realization by the company that many MIS directors have been opting for Macintoshes as terminals to their

VAXs. According to the Gartner Group, Inc., between 20% and 30% of all micro installed base VAXs are Macintoshes.

Fueling the Mac-to-VAX debate have been DEC's failure in the personal computer market and the relative ease with which Macintoshes can communicate

with VAXs. Third parties have responded with communication products facilitating the link.

A lack of specifics—products have yet to be announced—appears to be troubling some users. Apple and DEC have promised that more details will be offered at a developers' meeting

scheduled for August.

"I've yet to have any DEC salesmen ever recommend anything but a DEC product to me," said Bo Pitzer, MIS director for the Lawrence Livermore National Laboratory. "Apple's Mac and DEC's Vaxes are competing products. If one of them disappears, you might actually convince me that an alliance exists."

## Purchases on hold

One MIS user said he will hold off purchasing any third-party products for Mac-to-VAX connections until DEC and Apple's August announcements. "It could change everything out there," said Mark Goldensberg, Apple support coordinator at Hughes Aircraft Co.'s Boeys Park, Calif., facility.

Apple officials have said they have no plans to disrupt the installed base of Macintosh and DEC users.

Goldensberg's group has been connecting Macintoshes to VAXs for about two years using a number of different third-party products. "They're all about the same in terms of functionality," he said.

Even without specific products, the liaison may serve as a political tool for MIS professionals eager to bring Macintoshes into their shops. "The most important thing about this announcement is that it happened," said Daniel Chevix, president of Oleady Corp., developer of the widely used Helix Mac-to-VAX connection product. "It makes a political difference. It helps the people who have been trying to put together answers to problems and then got hit with political and religious pressures from their bosses. It takes away the lingering fear and doubt."

## Mac links steal desktop show

ANAHEIM, Calif. — Communications products for Apple Computer, Inc.'s Macintosh personal computer dominated the exhibitions at last week's Desktop Communications Conference, co-sponsored by Infonetix, Inc. and Andrew Seybold's "Outlook on Professional Computing" newsletter.

Products shown ranged from electronic mail systems for Mac-based local-area networks to connections allowing Macintoshes to communicate with larger systems. Apple and Digital Equipment Corp., fresh from the announcement of their intent to co-develop products allowing more efficient connections of Macintoshes to DEC's VAX minicomputers, had dominant floor space.

Apple Chairman and Chief Executive Officer John Sculley said DEC and Apple's relationship will fuel an important third-party industry. If the Desktop Communications Conference in any indicator, third parties apparently agree. The following are among the announcements made at the show:

• 3Com Corp. introduced an Ethernet adapter for Apple's Motorola, Inc. 68020-based Macintosh II that allows the microcomputer to be used in a 10M bit/sec. Ethernet network. Called the Etherlink/II and priced at \$595, the adapter is designed for use with 3Com's 3+ networking software.

• Infonetix, Inc. introduced Taskstream, a communications software package allowing Mac users in remote locations to access Apple's AppleLink and Ethernet networks. Once connected, users can share all network services, including E-mail, file servers and printers. Called Liaison and priced at \$195, the product allows portions of the network to be kept off-limits to remote users for security purposes.

• Dayna Communications, Inc. in Salt Lake City unveiled Daynetmail, an E-mail software program scheduled for availability this spring in both Macintosh and Microsoft Corp. MS-DOS versions. Daynetmail is the outcome of an agreement between Dayna and Action Technology, Inc.

JULIE PITTA

## Sculley expects 30% increase in '88 earnings

CUPERTINO, Calif. — Apple Computer, Inc. last week predicted a rosy year for the computer industry in general and Apple in particular despite some Wall Street watchers' warnings of a recession.

The company's annual meeting, Apple Chairman and Chief Executive Officer John Sculley projected that computer industry sales will increase by 30% during 1988, up from a forecast of 25% for last year. Additionally, Sculley said Apple's revenue will grow by between 30% and 40%.

Sculley told a separate gathering of Wall Street analysts a day earlier that 1987 was a year of new systems for Apple but that 1988 will be one of peripherals, especially communications products.

However, he said Apple expects to introduce a mid-range Macintosh, positioned between the \$4,000 Macintosh SE and the \$10,000 Macintosh II. The new system, which Sculley characterized as a low-end Mac II, is set for a launch during the second half of this year. Pricing will be in the \$5,000 to \$6,000 range.

Wall Street analysts said they were pleased with Apple's projections. "The company has done extremely well, and it's much more balanced at this point," said Bruce Lupton, an analyst for Hambrecht & Quist, Inc. "But there's much more to achieve. They haven't penetrated businesses to the degree that people seem to think."

## Unisys lowers entry-level threshold

BY STANLEY GIBSON  
OF STAFF

BLIET BELI, Pa. — Unisys Corp. last week announced two entry-level systems, the 1100/91 and 1100/92 Model II SV processors, which offer the same performance but reduce the cost of the machines they replace by 18% to 26%, according to Unisys.

Unisys also cut prices by 10% on all other processors in the 1100/90 Model II series.

The announcement completes the enhancement of the 1100/90 product line that began last summer when Unisys quietly introduced the 1100/90 Model IIa, which replaced previous 1100/90 processors. In the fall of 1987, Unisys announced the 1100/94 Model II Turbo, a high-end model.

The SV versions of the 1100/91 and 1100/92 were in-

troduced in July 1985 as lower priced, lower performance versions of the 1100/91 and 1100/92 models.

Developments on the former Sperry Corp. 1100/90 line had been held up during the last year by uncertainties resulting from the merger of Sperry with Burroughs Corp., according to George Lindamood, a Unisys analyst at the Gartner Group, Inc. in Stamford, Conn.

But with corporate conflicts now resolved, Unisys may be able to catch up to IBM in the next few years with the 1100/90 series, he said. "However, they are not there yet," Lindamood said.

## Some for less

The 1100/91 Model II SV is a single-processor system that comes in 8M-byte or 16M-byte memory units. It is priced at \$1,429,000, including operator

console and operating system software. Unisys said the price is 26% less than the comparable entry-level 1100/91 SV model

introduced in 1985.

The dual-processor 1100/92 Model II SV is priced at \$2,605,000, an 18% reduction over its earlier SV counterpart. The 1100/92 comes with two 16M-byte memory subsystems,

the vendor said.

The new systems are object-code compatible with all current 1100 series and 2200/2000 systems and allow users to move to larger systems without converting software, the vendor claimed.

Both systems use 256K-bit random-access memory chips, replacing the 64K-bit chips used in their predecessors.

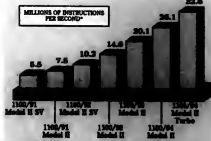
In addition, Unisys announced the Personal Workstation 2 (PW2) operator console, an IBM-compatible personal computer that can replace the Unisys UTS 60 dumb terminal as the operator console for a 1100/90 system.

The PW2 comes with 640K bytes of memory, a 1.2M-byte floppy disk drive, a 20M-byte hard disk, color console and printer. The console assembly priced at \$37,500, the same price as the dumb terminal configuration.

The products are available for immediate delivery, Unisys said.

## Plugging the gaps

Selections of SV models fills out the low end of Unisys's 1100/90 Model II family



\* Based on CW estimates

CF GRANT





## Banyan lays out a blueprint for OS/2

BY PATRICIA KEEFE  
CW STAFF

WESTBORO, Mass. — Banyan Systems, Inc., which prides itself on tying together multivendor environments, is extending its reach by adding OS/2 support.

Last week, Banyan detailed a two-phase plan to integrate OS/2 Standard and Extended Editions support into its AT&T Unix System V-based Virtual Networking System (Vines) operating system.

None of this support will be delivered until the first half of 1989. The delivery schedule for OS/2 applications stretches from late this year to late 1989.

The first phase of Banyan's OS/2 implementation is slated to be available in early 1989. It will include support for OS/2 print spooling and file and device sharing; user and system administration features; IBM's Netbios; a distributed applications platform supporting OS/2 as a client and Unix on the server; and basic communications services such as IBM's Systems Network Architecture (SNA) and asynchronous terminal emulation.

Banyan said the second phase, slated for mid-1989, will

include support for a distributed applications platform for OS/2 clients and servers and additional communications services, such as CCITT X.25 and Transmission Control Protocol/Internet Protocol.

Analysis said that adding support for OS/2, SQL, and evolving IBM protocols strengthens Banyan's position as a corporate communications provider.

Vines will be available companywide before IBM's Systems Application Architecture and will tie in many more local-area networks than Digital Equipment Corp.'s Decnet Ethernet, predicted Andrew Seybold's "Outlook on Professional Computing," an industry newsletter.

As outlined last week, Banyan's strategy echoes somewhat that of Novell, Inc., which unveiled its plans in December. Along with 3Com Corp., these vendors' proprietary network operating systems are threatened by OS/2, which supports distributed applications in a multitier, multitasking mode.

While 3Com will incorporate Microsoft Corp.'s OS/2 LAN Manager into its software, Banyan and Novell will support OS/2 as an application server.

## Novell link opens SNA gate

BY PATRICIA KEEFE  
CW STAFF

PROVO, Utah — Novell, Inc. supplied a critical component of its plan to support enterprise-wide networking with the announcement last week of Network LU6.2.

The IBM LU6.2 gateway will tie Novell Network local-area networks to IBM hosts by providing the ability to invoke peer-to-peer networking under IBM's Systems Network Architecture (SNA).

"Every major vendor is implementing a version of LU6.2," said Darrell Miller, Novell's vice president of corporate marketing. He likened the importance of LU6.2 to that of standards such as Open Systems Interconnect and Transmission Control Protocol/Internet Protocol.

**Medium of transportation**  
A strategic component of IBM's Systems Application Architecture (SAA), the LU6.2 protocol provides peer-to-peer connectivity across IBM systems. LU6.2 functions as the transport mechanism for applications using the as-yet-unreleased Enhanced Connectivity Facility under SAA.

Novell LU6.2 will report-

edly provide Network users with similar support while allowing them to run IBM 3270 and LU6.2 applications over the same gateway. Novell said it will be fully compatible with IBM's Advanced Program-to-Program Communications/PC, known as APPC/PC.

**E**VERY major vendor is implementing a version of LU6.2."

DARRELL MILLER  
NOVELL, INC.

The LU6.2 gateway is media-independent and is supported on LANs based on Novell's Netware and IBM's Netbios. Most of the LU6.2 overhead is located in the gateway server software, making IBM's PC-DOS a more practical platform for LU6.2 applications, Novell said. Support for IBM and Micro-soft Corp.'s OS/2 operating system will be added later this year, Miller said.

Network LU6.2 will be included with each gateway in Novell's Network SNA Services product family along with two add-ons: the Token Ring Gate-

way and Token Ring Multi, a micro-to-mainframe software package said to support multiple host connections to an IBM Token Ring network.

The Token Ring Gateway is a direct Token-Ring connection via an IBM 3275 front-end processor or 3174 communications controller. Priced at \$550, it provides users with access to up to 128 host sessions at 4 mb/mt/sec.

Token Ring Multi provides access to multiple concurrent host sessions through a Token-Ring direct connection to the host. For \$395, personal computer users can have as many as five 3270 mainframe display sessions, up to four printer sessions and one PC-DOS session, Novell said.

Network LU6.2 will be implemented initially on Token-Ring or coaxial gateway connections via the IBM 3174 Distributed Function Terminal Controller. IBM does not offer APPC over coaxial cable, Miller said. Later support will include Synchronous Data Link Control links.

Novell said Network LU6.2 developers' kits will be available in March and that Network SNA Services and Network LU6.2 will be available in the second quarter. LU6.2 upgrades for existing gateways cost \$100.

## MIS disaster

FROM PAGE 1

\$35 million to cover expenses arising from Masternet, following a second-quarter reserve of \$25 million. The reserves cover costs such as delayed interest payments, waived fees, additional manpower and hardware.

Last October, Bankamerica's systems chief, Louis Mertes, and its top trust executive, Clyde Claus, resigned in moves attributed to Masternet's failure to generate timely statements and other data. That failure has led some institutional trust clients to take their business elsewhere. Bankamerica reports serving as trustee or agent for assets of \$34 billion held by about 700 institutions, down from \$38 billion for 800 institutions reported last summer.

### Key-offs involved

A Bankamerica spokesman suggested that layoffs may result from the scuttling of Masternet. "Clearly, there will be reductions over time in our trust operations and systems," he said. "We do expect there will be increased efficiencies."

Bankamerica had hoped Masternet would enable it to offer trust data processing services to small and mid-size banks.

Of the Masternet accounts

not going to Seafirst, Bankamerica told Friday said 29 "more complex" accounts will be processed by State Street Bank & Trust Co. in Boston, although actual management will remain with Bankamerica.

### Trust accounts

Seafirst processes institutional trust accounts remotely on SEI Corp.'s Trust-Ad 3000 system at SEI's headquarters in Wayne, Pa., according to an SEI spokesman. The system was designed 15 years ago but was upgraded last summer to run on an IBM 3090 Model 400.

For at least five years, Bankamerica has been building its Masternet system around the Trust Plus system developed by Premiere Systems, Inc., also in Wayne, which runs on Prime Computer, Inc. processors.

Premiere was founded in 1979 by former SEI employees with financing from Bankamerica. Seafirst, Philadelphia National Bank and Crestar Bank of Virginia. It was founded in an effort to improve on the institutional trust system that SEI then offered, according to a source familiar with the project. Bankamerica is the only firm that has attempted to go on-line with Trust Plus, the source said.

A spokesman for Philadelphia National Bank said his bank is not using Trust Plus but would

### Masternet's meltdown

Bankamerica's master trust accounting system does not function properly 10 months after the scheduled start-up



By Staff

not elaborate. Crestar officials could not be reached for comment.

In serving as trustees for institutional trusts such as corporate, union and government pension funds, banks track the performance of the independent money managers that make investments for the trusts, settle their trades, collect income from the investments and make payments to beneficiaries.

Bankamerica brought Masternet on-line March 1, 1987, replacing a 30-year-old proprietary batch processing system. In addition to generating monthly statements, Masternet was supposed to provide on-line up-

dating and querying.

However, Masternet failed to maintain current data and fell months behind in generating statements. These difficulties were caused by slow run and response times, communications problems and leaky disk drives, according to a former Bankamerica employee.

### Agency problem

Masternet also suffered a major blow from poor morale at a securities processing unit in Los Angeles that was involved with its development, the source said. In the midst of the conversion, Bankamerica decided that it would move the unit from Los

Angeles to San Francisco, leading workers there to slack off. "They did not work hard. They went home early," he said. The bank later decided to keep the unit in Los Angeles.

One Bankamerica trust client looking elsewhere for trustee services is the \$370 million Southern California Rapid Transit District, whose pension funds could generate about \$300,000 a year for Bankamerica.

"We have an obligation as fiduciaries to keep everything on an even keel. We haven't lost any money, but it's a great inconvenience not having information," said Edward Paul, pension and benefits manager for the fund.

Bankamerica has appointed Richard V. Fulp, an executive vice-president and head of the trust group at Seafirst, to run its trust department while continuing to lead Seafirst's trust unit. Mertes has not been replaced.

A spokesman for the U.S. Comptroller of the Currency declined comment on a published report that the agency is investigating Bankamerica regarding alleged banking law violations said to be caused by problems with Masternet. In 1984, Bankamerica consented to censure by the agency for its failure to inform customers that it was unable to keep current records of securities transactions as the result of a system conversion.

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## Alliant doubles speed of high end

BY STANLEY GIBSON  
OF STAFF

Alliant Computer Systems Corp. is set to replace its original FX/8 parallel processing minisupercomputer today with two higher powered models, the FX/40 and FX/80. The firm said its second-generation systems offer greater than twice the performance of the FX/8 in some applications.

In the announcement, anticipated by industry observers [CW, Jan. 25], Alliant said it will continue to offer and will drop the price of its FX/1 system from \$99,900 to \$59,900 for a base configuration. The FX/4 system, announced last fall, remains priced at \$99,900.

The new models, priced from \$150,000 to \$500,000, are said to be fully compatible with Alliant's earlier models and able to use some 100 applications available for the earlier systems.

### The heart is on

"The new product generation really turns up the heat on the competitors," said Marcia Brooks, a minisupercomputer analyst at International Data Corp. in Framingham, Mass.

Alliant archival Convex Computer Corp. has confirmed that it will soon announce a second-generation product of its own. Brooks said Convex's system, like its previous systems, will be compatible with Cray Research, Inc.'s supercomputers.

However, Brooks added that the new system will probably incorporate a parallel architecture similar to Alliant's, instead of

Convex's earlier uniprocessor vector architecture.

Adding that she expects Digital Equipment Corp. to announce a minisupercomputer late this year or early next year, Brooks noted, "When DEC unveils its response, the minisupercomputer makers—Alliant included—are going to come under extreme pressure."

Alliant rated the performance of a fully configured eight-CPU FX/80 at 65 million floating-point operations per second (MFLOPS), compared with a maximum of 26 MFLOPS for the earlier eight-CPU FX/8 model. The FX/40 is rated at 30 MFLOPS, compared with 14 MFLOPS for Alliant's FX/4 system.

The \$149,000 entry-level price for an FX/40 includes one computational element, one VME-based interactive I/O processor, 32M bytes of main memory expandable to 160M bytes, 1.1G bytes of disk storage and a cartridge tape drive.

The entry-level FX/80 system is priced at \$299,000 and includes two computational elements, two VME-based interactive processors, I/O processors, 32M bytes of main memory expandable to 256M bytes, a 16-line multiprocessor, 1.1G bytes of disk storage and a magnetic tape drive.

Each additional computational element, rated at a peak of 23.6 MFLOPS, is priced at \$59,000.

The systems are available for shipment in the first quarter, Alliant said.

## NAS extends expanded storage

Memory feature furthers AS/VL systems' IBM compatibility

BY JAMES CONNOLLY  
OF STAFF

SANTA CLARA, Calif. — National Advanced Systems (NAS) last week moved to make its AS/VL mid-range systems more compatible with IBM's 3090s by announcing a feature that lets users partition main memory to look like IBM's expanded storage feature.

The subsidiary of National Semiconductor Corp. also increased the memory limit on the three smaller AS/VL models from 128M bytes to the 256M-byte limit of the high-end AS/VL 80 and raised the maximum number of channels for all models from 24 to 32.

The AS/VL series was announced in Europe in March 1987 and in the U.S. in July 1987 as a competitor to the IBM 4381 and the low end of the 3090 line.

An NAS spokesman said NAS still recommends use of main memory rather than expanded storage but noted that some users want NAS to offer an expanded storage look-alike feature to ensure compatibility where NAS machines and 3090s run in a common environment. He cited the example of using an AS/VL to develop applications to run on larger 3090s.

While IBM's expanded storage feature is a set of memory chips connected by a bus to main memory, NAS's look-alike feature allows the partitioning of main memory. NAS achieved this by adding features to its larger AS/VL series of mainframes.

### Ahead of a trend

An analyst who follows IBM and IBM plug-compatible manufacturers, including NAS, noted that offering the expanded stor-

age capability on the AS/VL series helps NAS prepare for the natural shift of expanded storage to smaller systems.

Francis Gens of International Data Corp. said, "It makes sense in that NAS is already positioning the AS/VL against a 4381 follow-on, which certainly will include expanded storage." Gens observed that early users of expanded storage, which was introduced with the 3090s in 1985, were primarily very large MIS shops. He said that with user experience and continued IBM enhancements, the feature is becoming more useful to small shops and less of a novelty.

NAS said microcode updates to support expanded storage are free of charge. Memory upgrades for the AS/VL cost \$207,000 for 32M-byte increments, and eight-channel upgrade packages cost \$117,000.

## Storage Tech counters IBM DASDs

BY STANLEY GIBSON  
OF STAFF

LOUISVILLE, Colo. — Storage Technology Corp. last week responded to IBM's new tri-density 3380 Model J and Model K disk drives with its own tri-density model and offered an upgrade path to the subsystem.

Storage Technology's Model 8380R, capable of storing 7.6G bytes per drive, is set for fourth-

quarter availability. Packages to upgrade installed single- or double-density drives — a feature not offered by IBM — will be available in the second quarter of 1989, the vendor said.

"The interesting thing about this announcement is that you can upgrade in the field," said David Vellante, a peripheral analyst at International Data Corp. He said the promise of adding power to installed units will prevent some Storage Technology customers from scrapping their units in favor of IBM's tri-density models, which are already shipping.

A four-disk Model 8380R, capable of storing 30.2G bytes, lists at \$410,000. A similar configuration of the IBM 3380 Model

K drive with the same amount of storage lists at \$443,000.

In a move that mirrored IBM's announcement last fall of 4.5M bytes/sec. transfer rates, Storage Technology announced that its 8890 Sybercable Disk Control Unit will support a 4.5M bytes/sec. transfer rate in the fourth quarter.

Storage Technology also unveiled a scratch loader that can queue as many as 10 tape cartridges. The cartridge stacker was designed for Storage Technology's 4480 cartridge subsystem, which is compatible with IBM's 3480 tape cartridge subsystem. The loader is scheduled to be generally available in the third quarter and priced at \$8,455.

## Model 50

FROM PAGE 1

hands on more, we'll start populating our office with them," said Travers Watp, vice-president of communications at The Travelers Corp. in Hartford, Conn., and an early user of the Model 50. "I think our strategy is going to be that the intelligent workstation at Travelers will be the midrange Model 50."

Users praised the Model 50's capabilities in handling the traditional problems that vex larger networks: cost, security and support.

"We're saving \$400 to \$500 per PC by making them diskless," said a user of one of the IBM prototypes at a large New York-based financial firm. "The average cost of a floppy, a hard drive and a controller — and multiply that by several thousand work-

stations, you're talking about millions of dollars saved."

The diskless personal computer is a recent concept that has emerged with the growth of LANs, host connectivity and increasingly sophisticated PC-based file servers. 3Com Corp., Santa Clara Systems, Inc. and NCR Corp. currently offer diskless PCs.

IBM could extend the diskless option during the next several weeks as part of a larger announcement, according to Clare Feig, director of research at International Technology Group in Los Altos, Calif.

"Later on this year, they will also be bringing out some networking products that will allow the Micro Channel to be hooked up to new models of IBM's controllers," Feig said. "Their networking strategy will be much cleaner than it is now, and a diskless Model 50 will fit right into these plans."

In addition to the money

saved by eliminating software duplication, the setup prevents the removal of sensitive centralized data. "If our brokers don't have data on their machines, they can't copy their client base the afternoon before they quit the company and go to the competition," the financial user said.

### Next first in this family

The Model 50 would not be the first PS/2 family member to go diskless, but it would be the first to be based on the Micro Channel architecture, a proprietary hardware design that IBM says carries big potential for corporate users.

A diskless version of the Intel Corp. 8086-based PS/2 Model 30 has been distributed to some customers, but it does not contain the Micro Channel design [CW, June 15, 1987]. IBM has not formally announced either machine.

"We are absolutely going to need the power of the Micro

Channel," said The Travelers' Watp, who has looked the Model 50 to a PS/2 Model 60 server supporting a dozen other nodes. "We don't buy anything that has the old bus in it, such as the Model 30."

The Travelers plans to expand its token-ring network to include approximately 500 personal computers, many of which will be diskless PS/2 Model 50s, according to Joe Brophy, senior vice-president at the company.

"It also gives us the capability of instantly standardizing our software," Watp added. "All we have to do is down-line from a server. And every time one of these intelligent workstations comes up, we know it has the latest version of our software running on it."

The Model 50 also affords the opportunity to run IBM and Micro Channel Corp.'s OS/2 operating system, which requires an Intel 80286 or 80386-based machine.

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## EDITORIAL

## Moneyspeak

THE FOURTH-QUARTER financial reports are in, and information managers are once again sorting through analyses to shape opinions that will affect their confidence in various vendors.

Cost-cutting gave IBM a big earnings boost, but Wall Street was not impressed. Data General's earnings climbed nicely for similar reasons, and Wall Street smiled. Apple, Sun and Microsoft saw profits boom, while Tandem's earnings dipped despite a nice sales gain.

What should MIS make of the quarterly ebb and flow? What do the numbers really say about suppliers and their long-term health?

Often times, very little. To begin with, the requirement that a public company report quarterly financials is a double-edged sword. Its purpose is to provide shareholders with a full and accurate accounting of their investments. But to companies and their customers, quarterly financial results taken at face value can be dangerously misleading, provoking decisions from both parties that are inherently shortsighted.

Three years ago, DEC was struck by a combination of product development delays and product cycle troughs. The result was disastrous quarterly results, a precipitous dive in stock price and then waning customer confidence. Few people, especially within the investment community, took the long view with DEC, and this myopic outlook shook customer confidence.

Clearly, the DEC story is different today. But which is the most accurate over the long haul?

Consider the case of Storage Technology — not the Storage Technology of today, which has emerged from Chapter 11 bankruptcy and has posted several consecutively strong quarters. But consider the Storage Technology of four years ago, the one Jesse Aweida built into the largest peripherals maker in the world, the one that went into Chapter 11.

Close examination, which is easier in hindsight, would have revealed that the old Storage Technology was extremely vulnerable, despite its world-class size. Its rapid growth came as a result of delays in IBM's shipment of key large-scale direct-access storage devices. The overwhelming portion of Storage Technology's sales were from two products — high-end disk drives and tape drives — whose markets were dominated by IBM. Just as companies like Magnuson were destroyed by a single IBM product announcement, Storage Technology fell to the IBM 3380 DASD.

Users have to read beyond the headlines. With the dollar plummeting, how does that impact a vendor doing half its business abroad? And what, therefore, is the impact on its relationship with domestic customers? How are product cycles affecting short-term profits and sales? If profits are largely the result of cost-cutting, how will that affect service and support or long-term investment in key product lines? Perhaps the most critical assessment to make is how responsibly does a vendor react to the normal peaks and valleys of quarterly business results?



## LETTERS TO THE EDITOR

## Natural evolution

There is a specific reference in "James Martin's show goes on" [CW, Nov. 9, 1987] that I would like to clarify.

The article quoted me as saying that Texas Instruments, Inc.'s computer-aided software engineering (CASE) tool is a closer implementation of my "perfect" model of information engineering than KnowledgeWare, Inc.'s IEW CASE tool.

However, TI's product supports only that methodology. Although information engineering will gain acceptance as a methodology over time, it is by no means the predominant methodology today. And I believe that to meet today's requirements, a CASE tool must support the methodologies MIS departments are currently using and allow MIS users to evolve at their own pace into more rigorous methodologies such as information engineering.

James Martin

## Around for years

I am writing regarding "Folding DOS into Unix" [CW, Dec. 7, 1987]. Finally, it seems that people are making a serious effort to make their DOS applications useful in the era of multitasking.

However, Summa Computer Systems, Inc., the company I work for as a customer support representative, has been doing similar things with a multiuser, multitasking, menu-driven local area network for years. The product is called SOAS.

SOAS, which stands for Summa Office Automation System, supports IBM's PC-DOS as a task under Summanet, its operating system.

Summanet has proven to be more efficient than Unix.

Throughput is better. Up to 10 times as many task switches per second can be performed. Forty tasks can be supported per node. Many real-time applications have been developed using this system.

Since SOAS is completely menu-driven, computer neophytes are able to be productive with the system almost immediately. This makes it not only more functional than both Unix and DOS but much easier to use as well.

Andrew M. Stevens  
Syosset, N.Y.

## Willing member

I read the article "Restructuring cases maintenance" [CW, Nov. 30, 1987].

The statement attributed to Richard Harrison that no other vendor would agree to a handshake test is erroneous.

Group Operations, Inc. would have welcomed participation. Unfortunately, we were never notified.

Group Operations' Superstructure has the largest number of users of all the structuring tools combined, with more than 160 sites.

Berry T. Murphy  
Vice-President  
Proprietary Products Division  
Group Operations, Inc.  
Washington, D.C.

## Unclear logic

I want to provide an opposing view to Eileen Malach's article "4GLs: Are we talking the same language?" [CW, Dec. 14, 1987]. Malach painted a myopic and sarcastic picture of the fourth-generation language industry.

He argued that "resource utilization is less of a problem than it once was" and, therefore, fourth-generation language vendors should not improve the efficiency of their products.

While I will not argue with the fact that the cost per million instructions per second is falling, I do believe it is naive to assume

Continued on page 20

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Labriola, Editor, Computerworld, P.O. Box 9171, 375 Cochrane Road, Fremington, Mass. 01701.

## This week in history

Jan. 30, 1978

Computer equipment from Xerox Corp. and Amdehl Corp., respectively, garners first- and second-place honors in overall user satisfaction in Datapro Research Corp.'s computer users survey.

What makes these results especially noteworthy are that Xerox no longer even makes or supports its systems, and Amdehl is a relative newcomer to the computer business.

Jan. 31, 1983

Houston's inadequate facilities, sultry weather and diesel fumes cause National Computer Conference organizers to set that city as the site for NCC '84. The decision raises the question of when and where the 1984 conference will be held.



# Can MIS cure health care ills?

Medical facilities finding it hard to swallow high tech's high-priced pill

HARVEY NEWQUIST



Medicine typically operates at the scalpel's edge of technology, from X-rays years ago to computer imaging today. Each successive technology supplants the one preceding it, adding to the cost of patient treatment.

Players in the health care industry—hospitals, health maintenance organizations, clinics—are attempting to use technology to minimize the cost of doing their business, which is delivering medical care. But the technological tools needed to better perform nonadministrative functions—such as doctors' exams, scans, diagnoses and tests—often cost more than they can save in improved efficiency.

There are ethical considerations here as well as financial ones. Not every person can afford a digital subtraction angiogram, which costs three times as much as a standard X-ray. Who should benefit from the most advanced technology—those who need it most or those who can pay for it? And who should decide—the hospital?

MIS's critical condition  
MIS and data processing become necessary, even critical, factors in delivering medical services as quickly and inexpensively as possible.

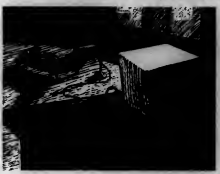
Newquist writes and consults on artificial intelligence and other advanced technology topics from his office in Scottsdale, Ariz.

sible. Monitoring patients' records, doctors' services, pharmaceutical needs, payments, debts and so on often requires specialized computers and operators.

New hardware and software applications are growing up within medical organizations—applications that will ultimately have to tie in with the existing

Medical Reference, which has captured the expertise of the university's chief internist. Of the 800 medicals currently associated with internal medicine, the university estimates that its system has already been programmed with expertise in 700.

Although such a knowledge base can never be complete because of ongoing medical re-



RON MANSOUR

state of DP.

For instance, Tufts University School of Medicine, along with three other Massachusetts hospitals, has determined that voice-recognition systems can handle 90% of a radiologist's reporting needs without the aid of a typist.

VA system in practice

The Veterans Administration hospital at the University of Pittsburgh is beta-testing an expert system called the Quick

search, the Quick Medical Reference, is already assisting physicians in making patient diagnoses.

A psychiatric clinic in Green Bay, Wis., is developing a diagnostic aid system that will, in response to a clinician's input, allow the tentative diagnoses of psychiatric disorders. The expert system, which is being developed on a personal computer using software from artificial intelligence system vendor Gold

Continued on page 20

mitting up front to a prospective employer that what you really want is a job that will make you and your family happy?

Not "I am seeking a new challenge to further my management skills," or "Goals in my five-year career plan include closer analysis of the marketplace and keeping up to date on all technical developments."

Instead, the ad suggests, it might now be valid to say, "The last job I had frustrated me and made my wife crazy," or, "I'm looking for something that doesn't require me to work on Saturday mornings." Or even, "I'd like to relocate to a town with reasonably priced housing and a good school system."

Backward to the future? If this approach is now valid, it's news to me. Once upon a time, it seemed employers and employees alike understood that the job applicant was looking for personal happiness. We just used the career goals lingo to dress up our

desires in more professional garb.

But in recent years, many employers have boldly ignored human needs. When they say they expect dedication to the job, they mean 60-hours-a-week, take-work-home, always-be-on-call dedication. Unfortunately, many ambitious, career-oriented employees buy into this mentality.

The result? It becomes embarrassing to admit you only want to work 40 hours a week. "What are you," your friends and co-workers wonder, "some kind of closet housewife?"

Last week, as MIS director showed me his company's memo on employee child care. It was embarrassing to admit you want to work 40 hours a week. "What are you," your friends and co-workers wonder, "some kind of closet housewife?"

That's certainly true, but why continue to use bottom-line language when the issue is obviously a personal one?

# Some marriages of convenience

AMY WOHL



Some new partnerships have made headlines recently.

Jan. 13, Ashton-Tate tied the knot with Microsoft, which, in turn, revealed an existing partnership with Sybase. These deals are aimed at creating a multiuser data base environment. Multiple personal computer users (using Dbase III, Ashton-Tate hopes) could share data via enabling software on a network server. The Ashton-Tate/Microsoft/Sybase collective has named that product SQL Server, a bow in the direction of IBM and its widely accepted standard.

The three vendors have agreed to work together, with Ashton-Tate getting exclusive marketing rights to the retail arena and Microsoft retaining exclusive marketing rights to hardware OEMs.

Just a few days later, Apple and DEC announced their decision to jointly develop (and, it seems, separately market) Apple-to-DEC connectivity products. Presumably, Apple is expecting to gain credibility, access to new markets and needed system-level solutions.

DEC, interestingly enough, has kept saying it is providing this Apple connection because its customers asked for it, implying that the company wouldn't have done anything so radical entirely on its own.

DEC and Apple have always seemed like a natural combination—two companies that believe that excellent products create their own marketing energy. Two feature- and product-oriented sets of customers who justify less than standard solutions by making them work themselves if necessary.

Midnight sounds

Are these partnerships just the normal course of business, or is something new going on in the computer industry?

A little of both. Great product ideas, particularly in software, still turn up in unpredictable places. Also, the ability to recognize, nurture and bring entirely new products to market is hard to find within large companies.

The software business is a good example. Big companies can write a new and improved version that carries an existing

product one step—sometimes a big step—further. Big companies can maintain and support existing products as long as necessary. Only rarely do big companies come up with whole new software concepts. The "Aha!" in the night is more likely to wake light (and hungry) sleepers still looking for their first winner.

So, inevitably, big software companies, such as Microsoft and Ashton-Tate, look to smaller, younger companies, such as Sybase, for innovative—or merely available—software technology.

An apple story

This situation is itself isn't new. Microsoft and Ashton-Tate, as well as other successful software companies, have grown through acquisitions and partnerships. Think of Multimate, Framework and Powerpoint. Think for that matter, of MS-DOS. What's different now?

There is no big, powerful, product-hungry company here exploiting the financial needs or business naivete of a small company with a neat product. These

THE "AHA!" in the night is more likely to wake light (and hungry) sleepers still looking for their first winner.

are big, powerful companies joining together into very big, very powerful alliances. We are looking, perhaps, at the emergence of "super" software companies. The recent announcements are simple ad hoc alliances, designed to make something happen sooner or to ensure a larger market share for a collectively developed, collectively marketed product.

The companies are moving in early, looking in their offering as the standard for an important and emerging market, preventing a role that might, in an earlier day, have been played by IBM or an industry consortium.

The next round of joint offerings might feature even larger company mergers, and, indeed, I suspect that such activity could occur this year. But I also expect the emergence of at least a few umbrella relationships, whereby many small developers could bring their wares to market through the talents and resources of a company that would offer funds, packaging, marketing.

Continued on page 20

# Bringing the kids to interview

AMY SOMMERFELD FIORE



"We understand life's highest priorities," proclaims a national MIS recruiting firm in a recent advertisement. The ad pictures a 35ish family man beside his smiling wife and daughter. The firm claims it can help him—and you—"achieve both personal and professional satisfaction."

Now isn't this a fresh idea in your search for a new job—ad-

Fiore is a Computerworld senior editor.



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## Health care ills

CONTINUED FROM PAGE 17

Hill Computers, will generate evaluations that meet the criteria established by the Diagnostic and Statistical Manual of Mental Disorders as outlined by the American Psychiatric Association.

Technologies such as magnetic resonance, ultrasound and imaging for reconstruction are already normal, even if esoteric, components of computerized health facilities. Systems that evaluate a person's potential for heart failure, headaches that allow patients to communicate and software programs that enable paralyzed limbs to be activated via electrodes are the next computer frontiers.

Advances such as voice-recognition input and expert systems must ultimately be integrated into mainframes, minicomputers, networks and data bases. A psychiatric evaluation done by an expert system must be able to draw information from a patient's medical history file, which may be located on a different type of computer in a different state.

Conversely, an administrative system for issuing patients doctors' bills at a clinic may need to consider time spent using an expert system at a hospital.

Health care is the first field that serves millions of consumers daily to face this challenge of using computers to try to cut the costs of other types of computers and, at the same time, to better the services delivered to customers.

## Marriages

CONTINUED FROM PAGE 17

ing know-how and ready access to distribution channels.

Apple's recent Claris spin-off might serve as a model, although there might also be less structured relationships in which the software inventors might stay in separate companies while funneling their offerings through their packaging and distribution partner.

In fact, it is getting difficult to start new software companies. Anyone with a personal computer and some spare time can think of an idea and write some code, but bringing a commercial product successfully to the marketplace, particularly

in volume, is much more difficult. Small companies find it nearly impossible to make their own way. More new software is being brought to market through the acquisition route — and I expect this trend to continue.

For Ashton-Tate and Microsoft, competing more effectively with IBM may be the main goal. IBM's mysterious and still largely undefined Extended Edition of the OS/2 operating system is developed with Microsoft is touted as offering special advantages to customers.

Software companies, as well as close manufacturers, fear that IBM's OS/2 Extended might cut them out of a substantial part of the lucrative PC market, and they want to act now — before IBM can show its hand — to lock in some customer interest, if not commitments.

DEC and Apple's new alliance may also be an anti-IBM move. Together, with their innovative hardware capabilities and their appeal to customers seeking early exploitation of technology, they are an appealing team. Everyone agrees that a data base is a primary PC application and that users need hardware and software facilities to permit them to readily share data. More important, they need interfaces and pass-through facilities to larger systems — as sketched out in the Apple-DEC announcement — to ease the chore of bringing sophisticated data from larger systems to largely unsophisticated users.

Ashton-Tate, Microsoft, Apple and DEC all will figure in providing pieces of the puzzle. But the prize of market share will go to the vendor who figures out how to make it work easily, with minimum user training or customer programming, and how to support problem identification and resolution in increasingly complex, multivendor systems.

Continued from page 16

that MIS executives, technicians and users do not desire optimum efficiency and responsiveness with any system, including fourth-generation languages.

If efficiency is not an issue, then perhaps productivity is. Not so, according to Malloch. He claimed that if a fourth-generation language reduces programming time by 50%, then the average programmer will save only three months' work — a gain easily used up in the fourth-generation language learning curve and, thereby, resulting in a net productivity loss.

That is preposterous. Malloch's logic assumes that programmers only code for six months per year, that programmers will only use fourth-generation language technology for one year vs. being an ongoing skill and that fourth-generation languages only address the development portion of the system development life cycle and not prototyping, maintenance or standardization.

I am glad Henry Ford did not use the same logic as Malloch when designing the Model T. The horse-drawn carriage was efficient, productive and superior technically to other forms of transportation at that time.

However, Ford had a vision. Without a clear vision for the future, based on innovation and technical excellence, how can any fourth-generation language vendor expect to have future success in the commercial data processing marketplace?

*Fred Mangiamati  
Branch Sales Manager  
Must Software International  
Los Angeles*



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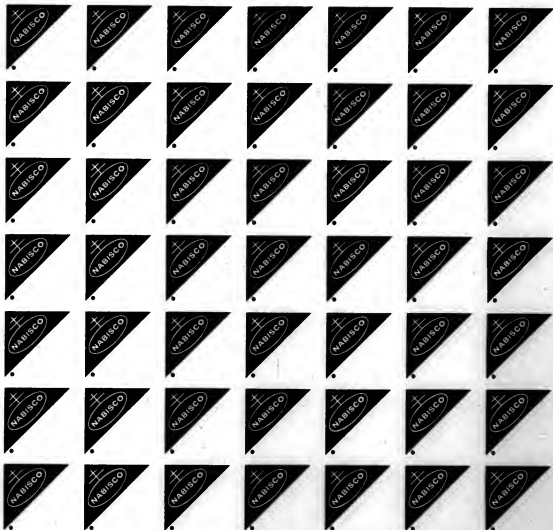
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**Mr. Donald Brout**  
Staff Vice President of Information Technology  
Nabisco Brands, Inc.

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# SOFTWARE & SERVICES

## SOFT TALK

Charles Babcock

### Have a Coke and a contract



The Coca-Cola Co.'s Corporate Information Systems (CIS) has become a lesser operation through the use of outside contract help. While many shops use contract personnel on a spot basis, Coca-Cola uses contractors 12 months a year to round out a highly contract CIS development staff.

At any given time, 15 CIS staffers are working alongside 65 hourly-wage contract workers on Coca-Cola projects. Although the Coca-Cola staffers come out of the ranks of programmers and analysts, they function much more as project leaders.

"I give my people a lot of credit. They didn't all believe in it. Some of them didn't want to do it. But they all rose to the occasion," says William H. Hendry, manager of corporate systems, who supervised the transition (see story page 57). How did Coca-Cola reach this advanced stage of reliance on contract workers, and how does it work?

When Hendry joined the company in 1983, Coca-Cola had a new chairman who wanted to slim down the company, stop adding employees to its payroll and begin to make things happen with its existing staff.

Hendry remembers saying during his job interview: "If I'm not making very many mistakes, then I'm probably not

*Continued on page 24*

## CASE firms ask what's new

AI, shakeout seen impacting technology's growth in near future

BY NELL MARGOLIS  
OF STAFF

NEWTON, Mass. — CASE is hot or CASE is not, depending on who you talk to. Last week, it was two software developers. Both said they are in the CASE market, but they offered starkly contrasting views of where the market is.

"Five years ago, the market didn't exist," Richard A. Carpenter, president of Cambridge, Mass.-based Index Technology Corp., told 150 members of the Massachusetts Software Council. "Now, the CASE market is growing in excess of 35% per year and is estimated to reach \$1 billion by the early 1990s."

Carpenter, whose company's



Richard A. Carpenter

Accelerator product is one of the most widely used in the so-called upper CASE, or front-end design and analysis, market, predicted the emergence of a new computer-aided software engineering

segment. "I call it the templates area," he said. "There's a growing market for prepackaged central data dictionaries that can then be added to by the user to customize them."

"Artificial intelligence techniques, which are just beginning to be used in CASE, will have a significant impact — particularly in providing 'on-board coaching' to software developers," he said.

Carpenter's preview of coming attractions also included emerging standards; a blurring of the line between upper and lower CASE — the areas of back-end code generation, testing and maintenance; increasing integration of CASE with new

*Continued on page 27*

## Checking up on SQL/DS

BY CHARLES BABCOCK  
OF STAFF

IBM's SQL/DS, just like its big brother, DB2, lacks referential integrity in the operation of its relational data base manager. But a small Wellesley, Mass., company is attempting to at least warn users when their data has lost integrity.

Intex Solutions, Inc. is offering SQL-Verify to provide an audit trail of changes to the data base and an analysis of tables used to see whether changes to data in one location have resulted in appropriate changes to related data in other locations.

SQL-Verify started out as an audit tool to be called SQL-Documentor, but beta-test users of the utility said they really wanted was a way to check the referential integrity of their data, according to Mark Gelfand, chief of research and development at Intex.

An early user of the product, Michael G. Caplan, vice-president of investment technology at

*Continued on page 24*

## TEXT MANAGEMENT SYSTEMS Help for the paper chase

BY JEAN S. BOZMAN  
OF STAFF

Like an adolescent, text management is about to come of age.

Born in the 1970s to run on mainframes, these highly specialized software packages were used mostly by large organizations that needed to store and archive extremely large amounts of text. Such users did not mind the high prices — often in excess of \$75,000 — or the intensive use of disk-drive resources that these systems required. The ability to accurately locate and revise vital documents, including legislation, insurance policies and technical reports, was worth the trouble.

But the high prices and the tendency of text management systems to use costly system memory kept the size of the market

*Continued on page 25*



PETER PERIT

### Inside

- Information Management software utility aids Wang users in developing custom applications. Page 24.
- Gibson-Graves announces management and QA software for manufacturing environments. Page 28.
- Palladian Software ports its expert system application package to Apollo's Domain Series 4000 Super Workstation. Page 28.

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## SQL/DS

CONTINUED FROM PAGE 23

Independence Investment Associates, Inc., a subsidiary of John Hancock Mutual Life Insurance Co. in Boston, said the product "identifies the holes. It gives you a list of 'here's where you don't have a matchup in your tables.'"

Caplan said the burden of supplying referential integrity lies with the user, who must debug the application program so that it does not cause data in one table to be updated while ignoring related data in another table.

Caplan said SQL/DS users could provide the referential integrity check without SQL/Verify, but they would probably do so by creating a brute-force query that would run through existing tables looking for discrepancies in related data.

Caplan said he has used SQL/Verify to check the integrity of entries in a cross-reference dictionary containing 3,000 code numbers of securities. The check took about 30 seconds. "From where I sit, it is blindingly quick," he said.

He estimated it would take SQL/DS running on an IBM 4381 Model 11 about 10 minutes to do the same check through a query that he would write himself.

The referential integrity check is limited to entities and does not cover domains, Gelfand said. SQL/Verify is priced at \$2,000 plus a \$200 monthly fee at an IBM Group 10 graduated pricing site. It is priced at \$5,000 plus a \$500 monthly fee for an IBM Group 40 site.

## SOFTWARE NOTES

## Consortium forms to develop mainframe ART

Inference Corp. in Los Angeles has formed a consortium with three companies, including Ford Motor Co. and Lockheed Corp., to fund and co-develop tools that will allow its Automated Reasoning Tool (ART) to be used to develop expert systems on IBM mainframes. The ART tools will be designed for IBM's IMS/DC, TSO and CICS environments.

Software that will help optimize the execution of programs on parallel processors has been developed at Indiana University and is now considered in the public domain. The Blaise Editor, or Bled, aids

users in improving performance of software already ported to the parallel processing environment. Bled allows interactive program editing and will warn a user if changes are being made in violation of the original syntax, according to Dennis Gannon, associate professor of computer science at Indiana University. An addition is under development to allow estimates of program execution behavior, he said.

The New York brokerage house of Donaldson, Lufkin & Jenrette has removed Oracle Corp. from the recommended list in its Jan. 11 research bulletin, partly

because the firm believes Oracle must have exhausted its short-term upward potential. After giving Oracle's technology, strategy and sales force a favorable review, it concluded that a slowdown in Tandem Computers, Inc. business left the brokerage house "uneasy." The firm "does not expect the stock to outperform in the current investment climate."

Computer Corporation of America says it has an interface between Ada and its Model 204 data base management system. The interface allows an Ada application to access the Model 204.

## Tool kit to help Wang users customize applications

BY NELL MARGOLIS

CW STAFF

FALLS CHURCH, Va. — Information Management Consultants, Inc. (IMC) last week unveiled a software utility aimed at aiding users of Wang Integrated Image Systems (WIS) in developing customized applications.

IMC's Transaction Assistant, a programming tool that lets users develop applications for automated document tracking, was specifically designed to supply the missing link for WIS.

Introduced by Wang Laboratories, Inc.

in July 1987, WIS is an image processing system that scans images of documents and pictures and stores them on optical disks, magnetic disks or microfilm, from which they can be retrieved. WIS is based on the Wang VS minicomputer and the Wang Professional Application Creation Environment (PACE).

Richard D. Schwartz, who follows image processing for Sheraton Lehman Brothers, said that "applications software is crucially important in this industry." The image processing market is expected to triple to \$308 million this year, but so far, "the hardware is outpacing the software — you could almost call software the missing link," Schwartz said. "A tool kit could be tremendously important."

Wang is banking on WIS to push VS sales and to power a company turnaround. However, Charles A. Magliato, northeast regional manager of IMC, a Wang cooperative marketing partner, said prospective

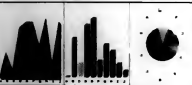
customers "had trouble envisioning WIS in their own settings, particularly in on-line transaction processing applications."

What Transaction Assistant does, said IMC President Sudhakar Shetty, "is let the user define, by means of tables, every step a document takes, from the moment it enters a company until its final resolution." Both IMC and Wang are targeting large, transaction-intensive, paper-swamped outfits.

With the help of embedded triggers and a key-word system that can be programmed directly into an application, Shetty said, electronic images captured by WIS and grouped into "electronic file folders" with assigned data processing transaction codes can be automatically routed to the appropriate stations to be processed by the defined parties.

Available now, the Transaction Assistant costs about \$10,000, depending on the extent of support bundled in.

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## Babcock

CONTINUED FROM PAGE 23

making enough decisions. You have to try some things," he says. That willingness to make decisions, along with Hendry's previous experience at getting the most out of a small staff, was what Coca-Cola was looking for.

"I was told I couldn't get any additional people, I said, 'Fine. I'll have my people do the things most important to me,'" Hendry recalls.

While serving as MIS director at Federal-Mogul, a national auto parts supplier in Detroit, Hendry had leveraged a small staff by making liberal use of outside contractors.

Bringing in outside contractors has its implicit hazards, however. They are paid a higher wage than regular employees, partly because they are not subject to company benefits. They are frequently newcomers, and the rest of the organization is more suspicious of them than fellow employees. And if contractors represent poor talent, they must be detected and winnowed out quickly.

Hendry made it clear to the custom programming firms in Atlanta that he expected their best people. He screened firms himself to make sure he was acquainted with the talent pool available.

And although reasons of space have something to do with it, a contract employee's working conditions never seem quite

equal to those of a regular employee.

Two or three contract programmers, for example, can fit into one cubicle, while only one Coca-Cola employee would occupy that space.

Given these hazards, Hendry nonetheless believes that contract workers represent an effective way to leverage a small staff. Different projects require different talents, and the metropolitan Atlanta region affords a wide selection. Coca-Cola is a user of Applied Data Research's Datacom/DB and, when needed, trained Datacom/DB programmers are available.

At the same time, it is easier to change programming talent through outside contractors than it is to change employees.

These advantages are somewhat offset by the fact that once a project is completed, the maintenance task is left to Coca-Cola. The contract programmers remain on call, if needed, to work on part of a system, but the primary burden of support falls on the regular in-house staff of 15.

Having played his outside contractors to the hilt, Hendry now says he has a gut feeling that he is overleveraged and it is time to advocate adding more employees to provide greater in-house depth. He is in a well-informed position to make this case.

Babcock is *Computerworld's* senior editor, software & services.



## Paper chase

CONTINUED FROM PAGE 23

small. "Up to now, it has been [only] a stable market," says Jim Russo, vice-president of marketing at Focus Research, Inc. Even today, there are only several thousand users of such systems in the U.S., industry analysts say.

### Market getting hot

But implementation of the technology is on the rise, analysts also point out. "The market's beginning to heat up," says Heidi Gabrielson, an analyst with International Data Corp. in Framingham, Mass. And among today's users are some of the largest organizations in the country: B. F. Goodrich Co., Du Pont Co., the National Aeronautics and Space Administration, Cummins Engine Co. and Texaco, Inc.

Text management systems often act as repositories for legislation, insurance guidelines, technical reports and legal documents, including those needed for litigation purposes.

A fairly new user in the insurance industry is Northwestern National Life Insurance Co. David W. Haskin, senior vice-president of corporate resources, says Northwestern National has been using Info-Data Systems, Inc.'s *Inquire/Text* for 18 months.

"We started using *Inquire* in our legal department, where we manage and create hundreds of legal documents," Haskin says. "But there will be other applications, since underwriting requires the use of huge volumes of text and manuals." Right now, 40 to 50 people are using *Inquire* on a daily basis. But Haskin says he expects that number to double or triple in the next two years.

One of Northwestern National's biggest advantages in using a text management

system is the reduction of paper. "We have been able to cut down tremendously on our paper usage—it's less by a factor of 5-to-1," Haskin says.

In addition, text management makes information more accessible. "Using a product like *Inquire* allows your agents to have up-to-date information, since the system is on-line and interactive," Haskin points out. "Before we had *Inquire*, our manuals were only updated as needed and were reprinted at intervals of two or three years."

In addition to insurance companies, newspapers and other publications use text management systems to archive out-of-date stories or as reference libraries. And large firms use the products to store and access corporate policies and procedures.

At the Illinois Bell headquarters in Chicago, Information Dimensions, Inc.'s *Basis* text management product has been used for three years to capture and recall key corporate documents, such as speeches given by company executives and media clippings pertaining to the company. Now, Illinois Bell is developing a prototype interface between *Basis* and Digital Equipment Corp.'s *AS-In-1* integrated office package that Information Dimensions says it plans to sell next year.

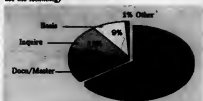
"It's just a natural extension of office automation," says Tom Zak, senior systems analyst at Illinois Bell and data base administrator for many of the *Basis* text li-

braries. The Bell operating company maintains nine separate data bases built on the *Basis* product, each handling a separate document category. Now, users are trying to capture electronic messages and memos—and to send them, along with attached text, to co-workers.

Text management systems vary in their underlying structure, but in general, there are more types of data stored in text management systems than in other office

### Installed shares of text management systems

Of 12,000 IBM mainframe sites interviewed, 40%, or 3.4%, use the technology



INFORMATION PROVIDED BY FOCUS RESEARCH SYSTEMS, INC. © FOCUS

automation products. One of the additional types of data refers to the placement of specific words in the text as well as the frequency of their use.

In addition, data fields are larger in these products. "The long management system doesn't care how long a field is," says Ann Marie Horcher, data base support specialist at Dow Corning Corp. in Midland, Mich. "That's important for maintaining a data base about chemicals and chemical names. Chemical information tends to have names that are longer

Continued on page 27

## Users push for text management players

The text management system market has been slow to develop. In fact, "many organizations struggled to find a niche for text data base management systems and couldn't find one," says Jim Russo, vice-president of marketing at Focus Research Systems, Inc. "If text management is to emerge again as a technology, it may be as a delivery vehicle."

Recently, however, users have pushed vendors in their need for text management systems. "Either text [management systems] are coming of age, or the companies are coming of age in how they deal with data processing," says Ann Marie Horcher, data base support specialist at Dow Corning Corp. in Midland, Mich.

Whatever the case, vendors seem to be making strides toward promoting the technology. According to Heidi Gabrielson, an analyst with International Data Corp. in Framingham, Mass., "Even the traditional DBMS companies are thinking about getting into the market, including Oracle Corp. and Relational Technology. Some have researched the possibility of offering a text data base management product and are looking at the text management vendors for products to resell." In addition, Software AG of North America, Inc. recently announced a text retrieval system called TRS.

Still, there are surprisingly few major, active players in the text management software market. There are at least 15 suppliers of text management systems, but just a handful sell most of the installed systems. IBM got into the business in the 1970s with *Stairs*, a product made by IBM in Germany, which accounted for 65% of the 408 text data base sites cited by a 1987 Focus Research survey (see chart above).

Another 14% in the Focus Research survey said they used *Docu/Master*, an older product developed by Dun & Brad-

street Corp., subsidiary TSI International. *Docu/Master* is now sold by Document Systems, Inc. in Norwalk, Conn.

Of the remaining text management users in the Focus survey, 11.2% said they use the *Inquire/Text* system from Info-Data Systems, Inc. in Falls Church, Va., and 8.6% use *Basis*, a system from Information Dimensions, Inc., a Columbus, Ohio, subsidiary of the Battelle Memorial Institute. The final 1.1% surveyed said they used a variety of systems, notably *TextDBMS* from Data Retrieval Corporation of America in Milwaukee, a subsidiary of West Publishing Co.

Not included in the Focus Research study were users of packages that run on non-IBM systems, including computers from Digital Equipment Corp., Wang Laboratories, Inc. and Control Data Corp.

Information Dimensions, which claims 1,000 licenses for its *Basis* product, has versions of *Basis* that run on all three of the above firm's equipment. Other vendors also serve the DEC marketplace, including DEC itself, which offers the *Dataview* product under its VMS operating system offerings.

Another market study, conducted recently by Computer Intelligence in La Jolla, Calif., found a 46% market share for IBM's *Stairs*, a 42% share for *Inquire*, a 7% share for *Docu/Master* and a 5% share for *Basis*. To compile its findings, Computer Intelligence surveyed 11,400 IBM mainframe sites and found fewer than 400 text management system users altogether.

Other products, such as *BRS/Search* from BRS Information Technologies in Latham, N.Y., *Text/204* from Computer Corporation of America in Cambridge, Mass., and *Info-DB Plus* from Henco Software, Inc., did not show up on the survey because of a relatively low installed base.

JEAN S. BODMAN

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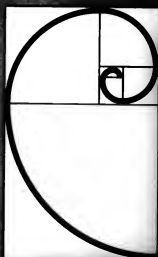
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## Paper chase

CONTINUED FROM PAGE 23

than standard English names, and 256 characters is usually the choke point of any standard information systems product," Dow Corning uses Basis.

Some text management products are more suited to locating key words and build a very small index, as there are very few text fields. For instance, DocuMaster — an older product developed by Dun & Bradstreet Corp. subsidiary TSI International and now sold by Document Systems, Inc. in Norwalk, Conn. — searches for words sequentially, stopping at each hit in the text.

Other products, such as Infodata Systems' Inquire/Text and TextDBMS from Data Retrieval Corporation of America in Milwaukee, build relatively large indexes as text in their files.

Such systems are based on positional indexing, which means that each new word is cataloged according to its relative position in the document.

As more text is entered, the size of the index grows. Only "noise" words, such as common prepositions and short verbs like "is," would not be cataloged. For this reason, indexes to a text management system can build files that are 10% to 30% as large as the documents being stored. That means that an index to a document 10M bytes long might add an additional storage burden of 3M bytes.

Accordingly, Illinois Bell's Zak predicts that such systems will come to occupy a significant part of the real estate on a company's disk drive peripherals. "The largest text data base we have is 100,000 bytes, which is about 10% of one 896M-byte RA 81 disk drive," he says.

But if storage on disk drives ever becomes a problem, older users say, some documents may be archived to compact disk/read-only memory drives or optical disks. This may be done in-house or farmed out to dial-up services.

"We definitely will do some archiving, either to an optical media or to a solid-state disk," Northwestern National's Haskin says.

For many users, the storage question simply does not come up. The Illinois State Legislature uses more than one IBM 3380 disk drive to hold the state's laws on-line for electronic research, and the California State Legislature is planning to place all the state codes on-line.

The California legislature uses Inquire/Text for text retrieval of legislation and recently purchased TextDBMS for creating new text files.

While the storage issue can be resolved, updating is another matter. Most text management systems are not updated on-line. Instead, a data base administrator decides how often to run batch updates. The California legislature runs such updates once every half-hour during the workday. Other users prefer to update overnight. Between updates, alterations to stored text are maintained in interim files.

### IBM behind the pack?

Just as the pace of installation of most text management systems is beginning to pick up (see story page 25), many users of the older front-runner product, IBM's Stairs, are abandoning it. IBM added Stairs/PC, a PC interface to Stairs running on the mainframe, in June 1987. But many users resent IBM's lack of support for the Stairs product and fear it is only a matter of time before Stairs is discontinued.

Dow Corning did not wait. The firm used Stairs until Basis was brought on-line four years ago. "We found that Stairs did not allow us sufficient functionality and flexibility to deal with the complex types of text we had," says Horcher, who is also president of the Basis Users Group. "It was a more basic type of system. You had to work by its rules. Sometimes an older design just can't make the journey as a company's needs grow."

Stairs was abandoned by Cummins Engine, too. Three years ago, Columbus, Ind.-based Cummins' corporate library switched to DocuMaster after 10 years with Stairs. "We use it constantly," says Bill Poor, manager of library services. "DocuMaster is a very easy system for the novice user, and the real beauty of it is that you can use it from any IBM terminal or IBM PC in the company."

Ease of use is not the only reason users purchase these products. Jack Plant, a consultant in end-user computing at the Automobile Club of Michigan in Dearborn, evaluated the leading IBM-compatible products and says, "All these products do pretty much the same thing, and they do it pretty much the same way."

The auto club settled on TextDBMS in June because that product's Textbuilder module allowed the club to easily customize the user menus. The organization, which runs an IBM 3090 Model 400, is

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DAVID W. HASKIN  
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developing multiple text data bases that will store travel information and facts on Michigan attractions that will help travel consultants handle phone inquiries.

### Future applications

As links to electronic mail systems grow, the nature of text management applications will vary. Some emerging uses might include research libraries for corporate memo writers, text data bases for manufacturing procedures and historical files that guide corporate management in making policy decisions.

New uses for text management are surfacing. Several large users are cooperating with the text management systems vendors to produce interfaces with integrated office automation packages such as IBM's Professional Office System and DEC's All-In-1. The trend is unmistakable, as users like Illinois Bell precede vendors in forging transparent links between an end user's word processing package or integrated office package —

and the underlying text retrieval engine.

According to Dow Corning's Horcher, "Many people are finding that with electronic mail, they finally have the text in a form that's easily transferable among computers. And since keying in text is harder than keying in data, [text management systems] are being linked to electronic mail as a whole new way of getting at information."

When users are shopping for text management systems, it can be difficult to select the product that best fits their needs. Sometimes, MIS managers are joined by a corporation's librarians or lawyers in making the decision.

Complicating the selection process is the fact that some vendors, such as Infodata Systems, Data Retrieval and Information Dimensions, do not have standard screen menus. Instead, they provide users with a tool kit of statements that allow users to customize the screen interface.

One added attraction, though, is that most vendors offer prospective converts the ability to use the software on a trial basis for 60 to 90 days.

In the end, the satisfaction of the end users will determine the success of a text system. "We were looking for a system that was really easy to use," says Larry Plunkett, senior system programmer at Florida Power & Light Co., which recently installed TextDBMS. "Most of my end users, including many corporate lawyers, could be described as being anti-DFP," Plunkett points out. And every little bit — including an easy-to-use text management system — helps.

## CASE

CONTINUED FROM PAGE 23

techniques and methodologies; and the inevitable result of a boom: a shakeout, "probably starting next year and continuing on into 1990."

In contrast to the view from upper CASE, Gordon J. VanderBrug, vice-president of development at Salem, Mass.-based Language Technology, Inc. questioned the use of the words new and successful as apt descriptions of CASE.

"What's new is the acronym," said VanderBrug, who described himself as representing neither back-end nor lower CASE, but "existing CASE." Language Technology produces a Cobol analysis and restructuring product called Recorder.

Recent figures show that at the start of 1987, there were some 750,000 software programmers and analysts in the U.S.,

VanderBrug said. If that is so, he said, "the question becomes, Why hasn't CASE been more successful? Because what most CASE tools automate is not what most software programmers do."

Citing maintenance as accounting for some 80% of the overall effort of providing software, the Language Technology executive called it "grossly overlooked" by automation enthusiasts. "What we desperately need is not more code generators, but a reverse-engineering technology to aid in maintenance."

VanderBrug heralded a coming "re-design era," replete with tools that reverse-engineering obstructions interactively available to programmers, and automatic restructuring to graphics workstations and support automatic derivation of data abstractions from Cobol. "We must have CASE for existing systems," he said. "They control almost every aspect of our business lives."

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## NEW PRODUCTS

## Systems software

A software system designed for use in management and quality assurance applications in manufacturing environments has been announced by The Gibson-Graves Co.

According to the vendor, Traq-1 features specific modules for analyzing quality data for raw materials, manufacturing and both batch and lot-oriented finished materials.

The system also provides full data base query and reporting capabilities, the vendor said.

Traq-1 runs on Digital Equipment Corp. VAX systems. A basic Traq-1 license costs \$25,000.

Gibson-Graves, P.O. Box 1078, 261 South St., Wrentham, Mass. 02093. 617-384-7164.

## Applications packages

Palladian Software, Inc. has ported its Palladian Operations Advisor expert system application package to Apollo Computer, Inc.'s Domain Series 4000 Personal Super Workstation.

The Operations Advisor was designed for use in applications involving capacity

planning, product mix change, new technology implementation, new methodologies and their effects on lead time, work-in-process inventories and cost reductions.

An initial license for the Operations Advisor costs \$90,000.

Palladian, Four Cambridge Center, Cambridge, Mass. 02142. 617-661-7171.

## Languages

An enhanced version of the GT.M MUMPS compiler for the Digital Equipment Corp. VAX family of computers has been announced by Greystone Technology Corp.

GT.M Version 2.0 features incremen-

tal backup, a faster version of the data base integrity checker, data base journaling, an on-line Help facility, new language features and a two-volume set of documentation.

GT.M conforms to ANSI standard X11.1. It is a true optimizing compiler that generates native-mode VAX machine code. An incremental linker and a concurrent data base system are included in Version 2.

GT.M license 2.0 costs from \$1,950 to \$35,000.

Greystone Technology, 8 Lakeside Office Park, Wakefield, Mass. 01880. 617-246-0461.

## Utilities

A general-purpose systems management facility (SMF) data-movement backup utility has been announced by Advanced Software Products Group, Inc.

Developed by Woven Software, Inc. in Houston, SMFutil operates as a replacement for the IBM IFASMPD system utility.

Functions include the ability to act as an interface between Computer Associates International, Inc.'s CA-Java accounting package; Marino Associates, Inc.'s MICS billing system; and the SAS system from SAS Institute, Inc.

Data retrieval is based on user-specified data selection criteria, and error correction and recovery features are included.

SMFutil runs on IBM MV-Series CPUs. It costs \$7,500.

Advanced Software Products, Suite 401, 2335 Tamiami Trail N., Naples, Fla. 33940. 813-649-1548.

## Data base management systems

3CI, Inc. has released Infocore Version 7.2, an enhanced version of its relational data base management system and fourth-generation language application development system.

Version 7.2 includes enhancements that allow the handling of document files, incorporate Wordperfect Corp.'s Wordperfect applications and provide new commands for the Macro module and record subsets.

Infocore is compatible with Digital Equipment Corp.'s Data General Corp. and Honeywell Bull, Inc. computer systems. It is priced from \$30,000 to \$50,000 per system.

3CI, Solar Office Plaza, 155 W. Harvard, Fort Collins, Colo. 80525. 303-223-2722.

## Development tools

A product that supports IBM VSAM file management operating in native mode under the VM operating system for IBM 370 and compatible computers has been announced by Unicore Systems Co.

Called VMVSAM, the software provides multiuser VSAM file support for both development and execution of programs. It provides full VSAM compatibility for Cobol programs ported from the IBM VSE or VMS environment. A call-level interface is provided for assembler and Rexx programs.

A permanent license fee ranges from \$5,500 to \$14,000.

Unicore Systems, 3807 Whittier Blvd., Los Angeles, Calif. 90010. 213-380-8974.

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Ed Scannell

## Compaq gets benched



On your (bench)mark, get set, go. Compaq recently completed a couple of different bench-

marks comparing how IBM's OS/2 Standard Edition 1.0 runs on IBM and Compaq systems. The first set of benchmarks pitted IBM's version of OS/2 against Compaq's version, set to be released by the end of March, running on Compaq's machines. "From what we can see from CPU, video and co-processor benchmarks, both operating systems [running] on our products are basically equal," said Gary Stimac, Compaq's vice-president of systems engineering.

In comparing IBM's OS/2 on IBM systems with Compaq's OS/2 on that firm's systems, Stimac said the only difference in performance is the difference in the megahertz speed of the chip. "If our [megahertz] processor is 20% faster than theirs, then the benchmark comes out exactly 20% faster."

Stimac said he is "very comfortable" in the feeling that Compaq hasn't lost any performance advantages in running OS/2 and that IBM hasn't

Continued on page 34

## SCO Xenix, OS/2 score equally

Face-off uses Xenix 286 after previous 386 matchup called unfair

BY ALAN J. RYAN  
OF STAFF

CHICAGO — Soon after IBM and Microsoft Corp. questioned the usefulness of benchmark tests comparing their jointly developed OS/2 with SCO Xenix optimized for the Intel Corp. 80386 chip, a benchmark software firm have conducted new tests comparing OS/2 with a comparable version of Xenix.

The results of the latest test conducted by Neil Nelson & Associates, which compares OS/2 with SCO Xenix 286 Release 2.2 in 17 different tests, found SCO Xenix faster in five tests and OS/2 faster in four.

According to spokesmen for IBM and Microsoft [CW, Jan. 11], the original tests unfairly pitted OS/2, an operating system designed to work with Intel's 80286 microprocessor,

against a version of Xenix designed to work with the 80386.

Those tests showed the initial release of IBM's OS/2 may run up to seven times slower than The Santa Cruz Operation, Inc.'s Xenix System V when performing the same tests on the same computer. The computer used in the test was a 2M-byte, 16-MHz IBM Personal System/2 Model 80 with a 70M-byte enhanced small disk interface disk drive.

Originator says tests fair  
Neil Nelson, principal of the testing firm, maintained that his original tests, conducted soon after the public release of OS/2 [CW, Dec. 28, 1987/Jan. 4, 1988], were fair.

"The logic of the test was that if a person were to buy OS/2 or Xenix for the PS/2 Model 80 at that time, [OS/2 and Xenix 386] were the choices available,

and a performance comparison might be of interest," Nelson said.

The benchmark tests indicate how the operating systems fare in the multitasking environment; they show a computer running first one copy of a task, then increasing one by one until 20 copies are executing simultaneously. The tests also indicate the degradation in seconds as the number of copies increases.

In the latest benchmark tests, OS/2 proved 300% to 600% slower than SCO Xenix 286, introduced in 1985, in a test that included 16- and 62-bit integer math, function calls, loops and sequential and random disk I/O.

According to Nelson, the test might be similar to a normal application mix with office automation and data base activity occurring at the same time. As multitasking activity was in-

creased, OS/2 showed increased degradation.

In a test that compared OS/2 with SCO Xenix 286 in the performance of 100,000 calculations with 64-bit, double-precision floating-point numbers — similar to an engineering or scientific application — OS/2 was faster than Xenix, with differences that ranged from 40% to 50%, the test showed.

In some tests, the operating systems were neck-and-neck in performance. Those included calculation-intensive tasks like word processing, a 250,000-cycle loop with no calculations inside the loop and short- and long-integer math.

### Inside

- AST's Qwacsys speaks out. Page 31.
- Quadram board seen by some as poor man's 386. Page 31.
- Ward claims its Forecaster can spot trends. Page 34.

## Data View

IBM's PC of the rock

IBM clearly leads in personal computer market share at Fortune 1,000 sites, as of November 1987



Source: International Business Machines Corp.

## Floppies stiffened up

Maxell says diskettes' durability doubled

BY ALAN ALPER  
OF STAFF

NEW YORK — Maxell Corporation of America recently unveiled a family of floppy diskettes said to offer significantly greater durability and error resistance than its existing product line.

The RD series, which includes 8-, 5¼-, 3½- and 2½-in. diskettes, employs a new technology said to more securely

load magnetic particles to the floppy diskettes' base film. As a result, single-track durability on 5¼- and 3½-in. diskettes is doubled to 40 million and 25 million passes, respectively, the company said.

The magnetic particles themselves have been improved, resulting in an increase of 10% in signal amplitude, noted Takashi Osawa, Maxell's vice-president

Continued on page 34

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# AST's Qureshey assays the thrill-a-minute PS/2 future

AST Research, Inc. has blossomed from one of the first and biggest IBM Personal Computer enhancement board vendors into a diversified systems manufacturer. After releasing the widely praised Premium/386 microcomputer in the fall of 1986, AST followed up with desktop laser printers and enhanced board offerings for Apple Computer, Inc.'s Macintosh and Digital Equipment Corp.'s VAX markets.

On Black Monday — Oct. 19, 1987 — AST introduced its latest system, the Premium/386, giving users some of the benefits of IBM's Personal System/2 Micro Channel architecture but within the IBM PC AT environment. The company also unveiled the first of a series of intelligent peripheral controller boards, which will take advantage of the Premium/386's SmartStart cooperative processing feature.

AST's diversification has not been without cost, however. Although revenue levels have been encouraging, the firm's net income dropped consistently through fiscal 1987. Only now is it edging back into the black.

Safi Qureshey, president and cofounder of AST, spoke recently with *ComputerWeek* West Coast correspondent James A. Martin about the company's diversification, future directions and the microcomputer industry outlook for 1988. Qureshey formerly worked at Computer Automation, Inc., an Irvine, Calif., minicomputer manufacturer.

**What has been the reaction so far to the Premium/386? How many units have been shipped or sold to date?**

We just started shipping in December, so we don't have any numbers yet. If you look at what's been written so far, you'll see it's been received very well. Just as we did with our 286 machine, we didn't just come out with a standard 386 that looks like a fast PC AT. We added some unique capabilities to do more than that. That's been our hallmark in differentiating ourselves — offering unique features within the standard.

**With PS/2 clones expected this year, what will happen to machines like the Premium/386, which only partially mimics the Micro Channel?**

We're totally hooked with orders and trying to manufacture systems as fast as we can. Introducing a PS/2 product could confuse our dealers and customers. On top of that, significant legal issues remain. If you talk to major chains like Businessland, they'll tell you they are also concerned about the legal issues. We do not believe PS/2-compatible introductions in mid-1988 will, by themselves, create a significant increase in IBM or third-party sales until those lingering legal questions are clarified. IBM hasn't chosen to clarify them, and that has caused a delay in the popularity of those machines. Meanwhile, our customers are not beating down the doors for PS/2 compatibles.

**There are reports that the**



Qureshey leads AST diversification, marked by emphasis on the unique

first companies to introduce a Micro Channel-compatible might be Taiwan firms hoping to make a splash in the U.S. Who do you think has bought the PS/2 so far? Traditional IBM corporate customers. Do you think they would run out and buy untested products that have legal issues hanging over them? Those who are buying now are those who were promised seamless integration from PCs to mainframes. They are big corporate customers. A giant company is not going to buy from Multitech, say, just because they are 15% cheaper.

**By making it tough, legally, to perpetuate the PS/2 standard, isn't IBM playing it risky? Doesn't the PS/2 need clones to survive?**

That seems like the case. For every month IBM delays clarifying its legal policies, it will make the PS/2 of a kind of standard. This

*Continued on page 35*

# All aboard at Quadram

Quad386XT seen as bargain alternative

BY JAMES A. MARTIN  
CW STAFF

When microcomputers based on Intel Corp.'s 80386 chip began appearing in 1986, many users wanted to upgrade but could not justify getting rid of their existing personal computers in favor of more expensive, faster models. At the same time, some users found they were approaching memory and performance limits with their current systems.

To many, the solution arrived in the form of add-in boards like Quadram Corp.'s Quad386XT. Quadram's board, which began shipping last October, promised the power of a 386 machine on an IBM Personal Computer or PC XT compatible via an enhancement card. Best of all, a user could trade in his Intel 8086-based system for a 386 for less than \$1,000.

With many 386 systems priced at around \$5,000, users were wary of upgrading.

"Price was the main factor in not buying a 386 machine," said Terry Swart, technical service engineer for Cain Chemical, Inc., a chemical manufacturing company in Ponca City, Okla. "With the 386XT, we could buy four boards for \$3,600 instead of [pending] \$5,000 for one 386 system."

## PC priorities

The investments made in existing IBM PCs were another reason for holding onto the PCXTs. "I looked at the prices of 386 systems, and even in discount houses they were well over \$2,000. The problem was, I already had a substantial investment in my existing XT," said Robert Tois, a corporate and tax attorney in New York.

"I had an old PC and didn't know if I should dump it or not, although I was reluctant to let it go because of the peripherals

that worked with it. They would be expensive to replace as well," said Rodger Kasan, a partner at Instant Recall, a Bethesda, Md.-based contract computer programming firm. "So the accelerator board really filled a need."

The desire to upgrade the PC XT was fueled both by software vendors, whose application programs increasingly required more memory and processing power, and IBM itself, by discontinuing the XT in 1987.

In addition, by 1987 the 8086-based PC was already two

## Quad386XT

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generations behind the Intel 80286 and 80386 processors — enough to fuel uncertainties among those companies pondering to live on the leading edge of technology.

Cain Chemical purchased four Quad386XT boards last year and plans to double that number in 1988 because of the firm's increasing use of more powerful software for computer-aided manufacturing applications.

"We started to bump up against speed problems with Symphony, Dbase III and Framework — just about everything seemed to be slowing down on our XT," said Cain Chemical's Swart said, referring to products from Lotus Development Corp.

*Continued on page 35*

# DBMS advances to key breakthroughs in SQL

BY FABIAN PASCAL  
and RICH FINKELSTEIN  
SPECIAL TO CW

First in a two-part series.

Performance is a major consideration in data base management system decisions, as evidenced by the number of benchmarking efforts now being undertaken. The performance of data base applications is affected by many factors, including the hardware, the CPU, the memory, the operating system, the data base man-

agement software and the nature and mix of applications and their concurrent use.

Within one application environment, on a given hardware-software platform, improvements in response time have traditionally been achieved by system administrators, application developers and even end users. They manipulate storage structures, indexing and procedural code to squeeze desirable performance out of the DBMS.

It is becoming increasingly clear, however, that in most en-

vironments this is problematic. Different queries and applications written against data bases require different structures and access strategies. Constant and rapid changes in both data and processing needs strain even the most competent of users and make performance tuning difficult and expensive.

C. J. Date, cofounder of the Cold & Date Consulting Group, cautions that tuning done by users may not ultimately achieve the best performance, because users do not have all the necessary up-to-date information and are not patient with the need to continuously retime. Clearly, machine performance cannot be pursued cost-effectively in the long run without proper consideration of human productivity.

Some balance between the two must be struck.

It is for this reason, in part, that relational technology is quickly gaining ground as a data base management foundation. Embedded in E. F. Codd's 12 rules of relational fidelity is the critical concept of "physical data independence," which requires DBMSs to insulate queries and applications from the internal representation of data.

To be productive, users should interact only with the logical level of their data; namely, tables, columns, rows and values, which they can readily understand and manipulate. If properly supported, "physical data independence" shifts some of the burdens of maximizing performance from users over to

the DBMS.

Take a look at what a relational DBMS does when a user or an application issues an SQL data request:

- Parsing.
- Syntax checking.
- Name lookup, specifically existence checking, authorization checking, view composition and integrity checking.
- Information gathering.
- Access data access.
- Execution.

The step that most affects performance is the data access decision; the selection of the best possible path to the data. Relational DBMSs are software modules called optimizers that specialize in this task, including on how to illus-

*Continued on page 35*



**And** it's 6:33 pm. The lines are down. And she's the closest thing I've got to a technician.

Meanwhile, I've got a sales guy here waiting to close a half-million-dollar deal, and he's screaming 'why didn't my order go through.' I have no clue. My technical staff is home watching the game. And all I keep thinking is whatever happened to that word reliability? If I could have anticipated the problem, at least I would have had a chance. As far as I'm concerned, somebody at headquarters better start talking to AT&T about getting a network management system. Or they can find themselves a new whipping boy.

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## Floppies

CONTINUED FROM PAGE 29

of sales and marketing for special products. The increase will help eliminate track errors and reduce interchange problems, he added.

Maxell has also reduced signal noise by creating a process to uniformly disperse magnetic particles within the floppy diskette's binder. In addition, an improved diskette liner is said to lift dirt and dust away from the recording surface and reduce errors.

The new series was developed in response to changes in how microcomputers are used, noted David Berry, new products development manager. Since

laptop and other portable computers are used in a variety of nonoffice settings, floppy diskettes had to be enhanced so they could perform in a more hazardous environment, he said.

### Braving the elements

"We've upgraded our disks in response to the changed environment—where humidity and temperature changes, as well as contaminants, are more prevalent," Berry pointed out.

Maxell's approach differs greatly from that of Verbatim Corp., which recently announced a line of diskettes that use a Teflon topcoat to prevent contaminants from damaging the recording surface.

Berry said a disk drive's read/write head could remove the Teflon coating

from Verbatim's floppies, resulting in additional contamination and possible interference with the signal.

Maxell said with the exception of 3½-in. diskettes, all members of the RD line will be available this month for approximately the same price as Maxell's existing line. A box of 10 floppies currently retails for between \$9.99 and \$12.99, a company spokesman said.

A box of 10 3½-in. floppies will cost 3% to 4% more than the current product line because most are manufactured in Japan and are subject to significant increases in the value of the Japanese yen relative to the dollar, the spokesman noted. The new 3½-in. floppies are expected to retail for between \$19.99 and \$24.99, he added.

## Scannell

CONTINUED FROM PAGE 29

gained any advantage, even though it had a hand in developing the multitasking operating system.

The purpose of the upcoming Compaq OS/2 announcement is threefold, according to Stinson: first, to talk about when it will be delivered; second, to show not only that IBM's OS/2 works well with Compaq's machines but to show off Compaq's built-in performance advantages; and third, to demonstrate how well popular third-party applications will run.

The one thing Stinson said he found surprising is that no one has been beating Compaq's door down to get their hands on OS/2. "We feel it is important to get it out there so developers and users can evaluate it. But is anyone beating down our doors to get it? Clearly not. But that's to be expected, because there aren't any applications out there that require it."

Tooling along with SQL Server. Sybase, the folks that made it possible for Microsoft and Ashton-Tate to make their SQL Server deal last month, announced last week it will part and distribute its Datasheet to OS/2. SQL Server used in combination with Datasheet will provide developers with all they need to put together work group applications that can talk with mid-range systems, according to the boys from Berkeley.

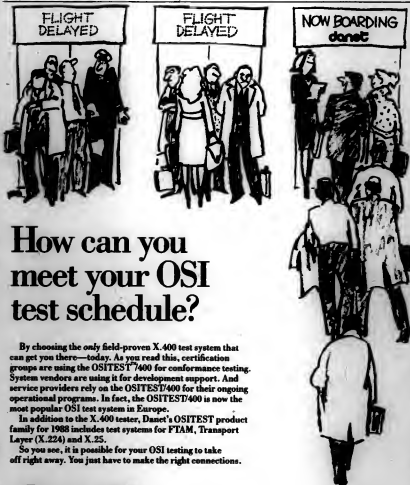
Would Bill Gates Excel at this? Lotus has created a nice little diversion called the Lotus game. It's a board game (system requirements: two or more people) that challenges the player to ship and sell a Lotus product around the world by gaining approval from the company's manufacturing, finance, research and development and marketing departments. I wonder if Bill Gates could pick up some pointers on how to get OS/2 Extended Edition to market any quicker. Come to think of it, could Lotus pick up something on getting OS/2 products to market quicker?

Could you pass the sweet and sour, Jim? A couple of weeks ago, the Associated Press ran a story on Lotus's opening up a 13-member sales office in Bellevue, Wash., the backyard of archival Microsoft. The heads of the two firms said there is nothing personal in the move. "There is no personal animosity," Lotus boss Jim Manzi said. "I am coming out [to Seattle] in March. I think I'm having dinner at his [Microsoft's Bill Gates'] house." Gates said he is curious about the new office but doesn't feel threatened.

Maybe after dinner they can sit around and play the Lotus game, with Bill trying to gain approval from Lotus management to market a product called, say, Excel, and Jim doing his best to undermine that effort.

Quote of the week. "Well, I don't feel bad about it," responded Microsoft Chairman Bill Gates when asked if it wasn't a bit awkward for his firm to refer customers to Ashton-Tate to buy the other half of the Microsoft/Ashton-Tate SQL Server.

Scannell Computer's senior editor, microcomputing.



## How can you meet your OSI test schedule?

By choosing the only field-proven X.400 test system that can get you there—today. As you read this, certification groups are using the OSITEST/400 for conformance testing. System vendors are using it for development support. And service providers rely on the OSITEST/400 for their ongoing operational programs. In fact, the OSITEST/400 is now the most popular OSI test system in Europe.

In addition to the X.400 tester, Danet's OSITEST product family for 1988 includes test systems for FTAM, Transport Layer (X.224) and X.25.

So you see, it is possible for your OSI testing to take off right away. You just have to make the right connections.

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## Qureshey

CONTINUED FROM PAGE 31

doesn't mean IBM will not have its share of the market, of course. But meanwhile, compatible manufacturers will continue to grow beyond the performance of IBM.

Like the Premium/386, have you incorporated any designs into the Premium/386 that will enable you to upgrade that machine as well?

When we came out with the 286, the 386 was already on the horizon, so it was more feasible to take that into account. Expanding the Premium/386 is part of the game plan, of course, but I couldn't say if it would take a 486 card or not. But we do have enhancement features in mind.

What is your reaction to Computer Automation, Inc. hitting up board companies for royalties on its patent?

We don't see that as a major issue, and it's not something we can discuss at this time. We have a good relationship with them and have had correspondence with them on that issue.

How will those royalties affect the cost of add-in boards for the PS/2, for AST and for the end user?

Again, it's too early to say, and we couldn't divulge the discussions we are having.

AST's most recent revenue report looked very positive, but not income had taken a beating. What is the situation now?

The September quarter earnings had reached the bottom, but our net income is also very positive for the quarter just ended. We expect to earn 10 to 15 cents a share for the December quarter, and that's just a start.

## Quadram

CONTINUED FROM PAGE 31

and Ashton-Tate Corp.

"The program had become so large that a simple 6088 machine couldn't handle them. But what was I going to do with all the old XT's? We had to go with a turbo board, and Quadram looked like the best on the market," Swart continued.

As a means of achieving 386 performance at low cost, the Quad386XT was rated as a worthwhile investment by all users queried. However, none discovered hardware compatibility problems while others said the board was more of a temporary solution and not a valid replacement for a 386 system.

Knaus purchased a Wico Distribution Co. Smart Board keyboard for his XT. He said the Quadram board does not recognize input from that keyboard during the read-only memory BIOS initialization process. As a result, Knaus keeps two keyboards by his XT: an IBM keyboard, which is used during booting up, and the Wico keyboard, which replaces the former and is used for inputting data.

Knaus said he was also disappointed when he added the Quad386XT board to a PC with 256K bytes of random-access memory provided mostly by add-on memory cards. He assumed that the

**B**ESIDES IBM, most of the major players realize the value of standards and cooperation between software and hardware vendors."

SAPI QURESHEY  
AST RESEARCH, INC.

As our volumes increase, we are able to bring our manufacturing costs down. Also, our new products—like the Premium/386—will have significantly higher margins than the 286. The board business is rebounding; we've been through the worst of it and probably have more PS/2 add-in products than any other company. As PS shipments increase, our add-in products should relate to those sales, especially when new applications for OS/2, which require more memory, come online.

What do you see as the biggest challenges facing AST, and the micro industry in general, in 1988? We will see new companies coming out with brand new applications for the faster machines and the PS/2s. In terms of micro applications, we've really only scratched the surface. What we've had so far is really just word processing, spreadsheets and data bases, but there should be applications in [computer-aided design, engineering or small-business multivendor environments].

Besides IBM, most of the major players realize the value of standards and cooperation between software and hardware vendors. The key beneficiary, of course, will be the end users. They can make decisions more intelligently, and we will work to make sure our customers get complete hardware and software that works together to solve their problems.

Quad386XT, with its 1M byte of extended memory, would assign enough of its memory to the system's RAM to bring it up to 640K bytes. Instead, he found he still had a 256K-byte PC but with 1M byte of extended memory.

"I had to go out and buy another memory board to bring the system up to 640K RAM," Knaus said. The Quad386XT uses the extra memory to design an on-board virtual PC, and the additional memory is not actually used by the board after the boot-up process, he added.

"The 640K RAM that I had to get with another card is never actually used after the boot-up, it's just there so the Quad386XT can design a virtual PC on board. It has to be there so the 386 board can create fast 32-bit memory on the motherboard," he added.

Overall, Knaus said the Quad386XT "fills a definite niche for people who want to speed up an existing machine." He purchased the board as an interim 386 solution while awaiting 386 price drops and performance improvements.

Users said that, in general, obtaining a 386 system for a small price is worth any minor drawbacks. "It's like buying a 386 machine for \$400," Swart said. "Although you still don't have the high-speed machine, this board will keep us from having to upgrade for at least two years. If it can do that for \$800, then it's fantastic."

## DBMSs

CONTINUED FROM PAGE 31

trate, for a table called Persons with each row representing personal data and both the Deptno and the Salary column indexed, the SQL query:

```
Select *
From Persons
Where Deptno = 'AI' and Salary >
25000
```

could be executed by accessing the data using the Deptno index, the Salary index or by scanning the whole table. An SQL back end receives and understands requests in terms of sets and set operations rather than row-by-row. Therefore, it can apply intelligent algorithms to information on storage structure, index availability and table statistics dynamically maintained in the system catalog to estimate the response times of available access strategies and select the most efficient one.

### Assumptions

It has been assumed that human intervention is necessary for such decisions. Consequently, traditional DBMSs usually collected neither statistical data nor ad hoc repositories (such as catalogs) to store for the optimizer. Moreover, nonrelational data base languages tend to be first generation, processing data one record at a time.

Without the benefit of the high-level table operators of relational languages such as SQL, an optimizer cannot analyze the total data intent of a request and evaluate the efficiency of available paths. The user must select and explicitly specify one up-front, which is not cost-effective in the long run.

This has important implications. For good performance, vendors should concentrate their competitive efforts on providing a broad range of flexible storage structures, good system catalogs and intelligent optimizers to eliminate the lingering myth that relational systems are inherently poor performers.

In addition, users should evaluate performance in terms of the degree of human effort necessary to achieve and maintain it. Proper relational design of data bases is

necessary to take full advantage of optimization.

System base optimization is particularly valuable in the microcomputer environment. Personal computer users are even less used to digressing into programming and tuning activities than their minicomputer and mainframe counterparts.

In addition, the distinction that exists between administrators, developers and end users cannot always be relied on or justified.

### Well rounded

Ideally, we need products that perform consistently well across the whole range of data base operations. Commercial reality, however, does not offer such luxury at this early stage.

Optimization research is a complicated field. Still in its infancy, resources are not unlimited, and vendors may differ in their priorities, expertise or targets. Consequently, relational DBMSs vary in their performance profiles.

For example, production systems may emphasize fast insert, update and delete operations. On the other hand, retrieval response time may be particularly important in decision support environments. Ad hoc interrogation of data bases by end users cannot afford optimizers that can be easily fooled by how users specify queries. Applications that involve heavy input of external data should be sensitive to the quality of the loading capabilities provided.

In testing PC SQL implementations for performance, we have found that despite the youth of the products and the 640K-byte DOS constraint, relational performance should no longer be questioned. At the same time, products do vary in performance and in the sensitivity of their optimizers to index configurations and operation types.

This reinforces the need to pay particular attention to the requirements of the specific environment for which a relational DBMS is selected.

**Next week: Examples from several PC SQL products.**

Presented in an independent analysis based in Washington, D.C., and is affiliated with the Cold & Data Consulting Group, specializing in relational technology and SQL, an microcomputers. Publications is a member consultant with Cold & Data.



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## NEW PRODUCTS

## Systems

Seitek, Inc. has announced an NCR Corp. Tower-compatible multicenter system capable of supporting up to 48 users.

The system, called the Max-20, is object-code and media

compatible with NCR Tower systems running Unix or Rysan-McFarland Corp.'s RM/COS operating systems. According to the vendor, it can also run standard DOS applications.

The Max-20, based on the NCR Model 3279 platform, is equipped with an 8-MHz Intel

Corp. 80286 processor and a Motorola, Inc. 68020 application processor. A standard system includes a 140M-byte hard disk, a 60M-byte cartridge tape, a 1.2M-byte floppy disk, Unix System V, DOS 3.1, a monitor, a keyboard and a 1,200 bit/sec. modem.

Prices range from \$7,995 to \$10,995.

Seitek, 6615 Snowfield Road,

Cleveland, Ohio 44141. 216-526-9433.

## Software applications packages

A Lotus Development Corp. 1-2-3 add-on designed for forecasting trends has been announced by Wisard Software Co.

The Wisard Forecaster is

said to automatically determine seasonal patterns as well as upper and lower bounds, minimum and maximum values, mean and standard deviation and slopes. Also included is math expression support.

The Wisard Forecaster runs on IBM Personal Computers with 1-2-3 Version 2.0 and higher. It costs \$99.

Wisard Software, P.O. Box 19730, Green Bay, Wis. 54307. 414-436-2341.

XEROX

## The new 4075 intelligent printing system. A brief case history of what its capabilities can do for your data center.

Xerox presents an open-and-shut case for the new 4075 intelligent printing system. In brief, it's the electronic printing system that's specifically designed to meet the needs of a medium-size data center.

The 4075, unlike other printers, has built-in intelligence that takes the bulk out of your work load without putting a bulge in your budget. Instead of piles and piles of fanfold paper filling and spilling everywhere, the 4075 prints on standard cut-sheet paper. Its 2-up capability lets you print the information contained on two sheets of fanfold paper onto one 8 1/2" by 11" page. The 4075 not only turns out caseloads of documents at up to 75 pages per minute, it's designed to let it about as

reliably and economically as any impact printer. Most important, it can give you quality and flexibility that no impact printer can. For instance, the 4075 can electronically store forms, signatures and logos. That means you can turn blank paper into completed documents in one pass and say good-bye to preprinted forms forever. And with 250 built-in fonts, it gives documents a striking appearance no impact printer can match.

Xerox makes an intelligent printing system for every application, from the data center to remote sites to the desktop. And all Xerox intelligent printers are backed by Team Xerox—one of the largest and most experienced service and support

groups in the industry. With the new Xerox 4075, the newest member of a family of intelligent printing systems, your work flow need never overflow again.

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## We document the world.

For more information about the new Xerox 4075 and our entire line of Xerox Intelligent Printing Systems, call us at 1-800-TEAM XEROX (1-800-832-4979).

Or, 515-752-0010 for the company letter.

Xerox Corporation, P.O. Box 24, Rochester, NY 14602.

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## Software languages

A portable, object-oriented, high-level assembly language programming tool with C-link syntax has been announced by International Microcomputer Software, Inc.

Riac is said to contain an object-oriented messaging kernel with source code and language extension capabilities.

The initial release runs on Intel Corp. 8086, 80286 and 80386-based machines. It costs \$79.95.

International Microcomputer Software, 1299 Fourth St., San Rafael, Calif. 94901. 415-454-7101.

## Software utilities

Nine to Five Software recently announced a report generation system for Apple Computer, Inc.'s Hypercard information management environment.

Reports for Hypercard feature row and column reports, free-form reports, multi-level sorts, multiple criteria card selections, column and page breaks, calculated fields, totals, subtotals, averages and math and string functions. Report layout, field selection and calculations are performed with the on-screen report builder.

Reports for Hypercard is priced at \$99.

Nine to Five Software, P.O. Box 915, Suite A-D, 231 W. Main St., Greenwood, Ind. 46142. 317-887-2156.

## Development tools

A compiler for Ashton-Tate Corp.'s Dbase III Plus has been announced by Dbase, Inc.

The compiler, called Dbase, is said to reduce the size of programs and to increase compiling speed. According to the vendor, minimum EXE file size is 1K byte, with a typical program size of 5K to 10K bytes.

Dbase uses standard Dbase III Plus commands, functions and data files and comes ready for use on local-area networks. Users can compile a program using Dbase or can run the program in interpreter mode using Dbase without modification.

Dbase costs \$149.

Dbase, Suite 2857, 1420 N.W. Gilman Blvd., Issaquah, Wash. 98027. 206-392-0368.

# NETWORKING

## DATA STREAM

Clare Feig

### Too little, too late?

When IBM unveiled its 4M bit/sec. Token-Ring network in October 1985, it promised to deliver a 16M bit/sec. version. According to IBM's initial statement of direction, the 16M bit/sec. Token-Ring would be used as a backbone for departmentwide or companywide networks with several smaller 4M bit/sec. Token-Rings attached. The smaller versions would be used for small departments and special-purpose applications. The catch was that while IBM was willing in 1985 to tell users that the faster network was on the way, it wasn't willing to say when. Last November, Ellen Hancock, president of IBM's Communication Products Division, broke IBM's silence on the status of the 16M bit/sec. Token-Ring and committed to deliver the product within two years.

To its credit, IBM did, at the November briefing, try to clear up some of the confusion about where the 16M bit/sec. Token-Ring will fit in the data communications scheme of things. IBM has outlined three strategies for the high-speed version of the Token-Ring: as a backbone network for the attachment of smaller 4M bit/sec. Token-Rings, as a channel-to-channel link between mainframes and for utilization by large corporate departments with high-speed network requirements.

These are by no means the traditional LAN applications now handled by the lower speed

Continued on page 38

## Colorizer hopes LAN makes pockets greener

BY KATHY CHIN LEONG  
OF STAFF

MARINA DEL REY, Calif. — The people at Color Systems Technology, Inc. have electronically debbed rosy color on the cheeks of Shirley Temple in 13 of her films and given Santa a scarlet overcoat in *Miracle on 34th Street*. Now, three years and 20 movies later, the company is embarking on a networking project that it hopes will advance its competitiveness in the colorization marketplace.

A Transmission Control Protocol/Internet Protocol (TCP/IP)-based Ethernet local-area network from Communication Machinery Corp. links Digital Equipment Corp. Microvax II and Silicon Graphics, Inc. Iris graphics workstations. This configuration should accelerate the firm's colorization output by three to 3½ times, according to Color Systems' Executive Vice-President Joe De Vita.

"Instead of making three or

four movies a month, we want to be able to do 10," added Mike DiCarantonio, manager of engineering at Color Systems and a former MIS manager at Able Computer, Inc. in Irvine, Calif.

In the colorization process, color artists add hues to 1-in. film tapes that are later converted into videocassette film. Currently, this process is performed through the use of separate video networks, computer networks and Color Systems' proprietary color computer and encoder, which combines the video images with the computer data in the final stages.

Not surprisingly, to take a film from inception to completion requires three to four months of work. It takes an existing four to eight weeks just to do the actual color conversion.

Color was fast. But the new Ethernet network and computer gear, valued at \$4.3 million, will make a significant

Continued on page 39

## VSATs rise again

Spate of rollouts may end technology's nap

BY ELISABETH HORWITT  
and MITCH NETTS  
OF STAFF

WASHINGTON, D.C. — The usually somnolent very small-aperture terminal (VSAT) satellite market bestirred itself in recent weeks as three major vendors made product announcements.

Typically marketed as low-cost, low-capacity alternatives to the older satellite dish technology, VSATs have had disappointing sales in the last few years, according to John McQuillan, president of McQuillan Consulting Co. in Cambridge, Mass. "VSAT is a promising technology that got overvalued by vendors before it matured," McQuillan said. So "there are a lot of gun-shy customers whose VSAT pilots didn't work."

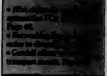
At last week's Communications Networks '88, or Comnet, conference here, NEC America, Inc. in Herndon, Va., announced what it claimed is the first VSAT product to support T1 links.

The Nextra CL TSAT is said

to support transmission rates of up to 2M bit/sec., or 1M bit/sec. in each direction. VSATs can communicate with one another directly rather than through a central hub, according to Philip Arcoris, NEC's national sales and marketing manager. A 3.6-meter antenna, which NEC recommends as a minimum size, is priced at \$30,000, including cable and a modem. A typical VSAT costs \$10,000, according to industry sources.

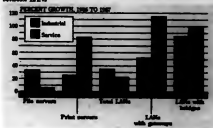
NEC will market the TSAT as an alternative to dedicated terrestrial T1 lines, which cost \$15,000 to \$20,000 per month, Arcoris said, "so the payback pe-

Continued on page 41



### LAN connections on the upswing

Industrial firms installed more LANs; service companies, more links between LANs



INFORMATION PROVIDED BY THE DESKTOP GROUP, INC.  
OF STAFF

## Service firms take lead in LAN growth

Service companies are seeing a greater growth in local-area networking equipment installations than manufacturing companies, according to a recent study by The Diebold Group, Inc., a New York consulting company.

Industrial firms have approximately 26 networked workstations per 1,000 employees — up 30% from 1986 — compared

with service companies, which have 24 networked workstations per 1,000 employees — an increase of 69% from the previous year.

Forty percent of all industrial companies rely on the telecommunications department to manage LANs, while 35% use their data processing departments. At service companies, 29% said their DP department handles LANs, compared with 28% that said it was the telecommunications officer's responsibility.

Office automation departments handle LANs at 13% of all industrial firms and 21% of all service companies, the report said.

## Superior Multivendor Connectivity

Forest Computer has the superior multivendor connectivity solution for organizations with IBM, DEC, HP, or Unisys networks.

### Superior Connectivity

Forest Computer's gateway is truly a multi-vendor gateway supporting not just two but four proprietary network architectures. IBM mainframes, System/38s, DEC VAXs, HP1000s, HP3000s, HP9000s, and Unisys A/V Series mainframes can all be connected through the same Forest Computer gateway.

### Superior Features

Forest Computer's network services include multi-directional virtual terminal emulation, file transfer, programmatic access, statistics, and diagnostics.

### Superior Compatibility

Forest Computer's gateway does not introduce a new protocol into your network, nor does it require emulating a foreign protocol on your mainframe or mini. Instead, Forest Computer's gateway supports each vendor's proprietary standard. For example, IBM mainframes are con-

nected to the gateway using SNA protocols and DEC VAXs are connected to the gateway using DECnet protocols.

### Superior Performance

The performance of your mainframes and minis is improved by offloading datacomm overhead onto the Forest Computer gateway. Each gateway is powerful enough to support up to 500 virtual terminal sessions. For high speed data transmission, the gateway supports IEEE 802.3 and Ethernet LANs as well as serial transmission speeds up to 56K bps.

### Superior Service

Forest Computer's quality services include on-site installation, training, and 24 hour support.

For more information write to Forest Computer Inc., 1749 Hamilton Road, Okemos, MI 48864 or call (517) 349-4700.

forest computer

# NETWORK DATAMOVER MEETS YOUR DATA TRANSFER REQUIREMENTS NO MATTER HOW THEY STACK UP.

Token-Ring or, in a pinch, the PC Network. The applications IBM has specified for its higher speed Token-Ring indicate that it is more likely to be marketed by IBM as a wide-area network (WAN) for use with primary applications — for example, the interconnection of buildings in a campus-type setting, such as Project Andrew at Carnegie-Mellon University in Pittsburgh — or the multiring configuration designed by IBM for Agway, Inc. in DeWitt, N.Y.

But even with this WAN positioning, the faster version of the Token-Ring is really too little, too late.

In the early 1980s, the promise of a 16M bit/sec. Token-Ring looked like a strong alternative to other young networking options — notably the 10M bit/sec. Ethernet introduced in 1979. Had IBM been able to capitalize on that promise then, its share of the LAN market segment would undoubtedly be higher than it is today.

**Push the catch-up**  
Instead, IBM is being forced to play catch-up with the rest of the industry. Other technologies, such as T1 links, are handling applications that IBM had originally earmarked for the Token-Ring. Also, other vendors — notably Proton — are providing faster and more innovative communications solutions using token-ring technology. These include the use of microwave signals and fiber-optic token rings running at 80M bit/sec. or higher.

Fiber-optic networks from vendors such as Proton and Fibercom can be configured as high-speed backbones that link multiple lower speed networks located in different parts of a building or campus.

The movement toward the use of fiber optics should be further encouraged by the development of the Fiber Distributed Data Interface (FDDI) fiber-optic networking standard, which should be finalized early this year.

Fiber is already being optimized in many large-scale network projects, and its reach will be extended as the cost of

## Fleig

CONTINUED FROM PAGE 37

fiber-optic components and connections continues to decline. IBM, of course, has not ignored fiber. The company specifies fiber as Cabling System Type 9 (running at 4M bit/sec.) for the Token-Ring, is active in the FDDI standards-setting process and has committed to supporting the final version of the standard.

Despite this support, IBM views fiber

as an alternative to its mainstream networking scheme. The 16M bit/sec. Token-Ring, for example, is expected to run primarily on IBM Cabling System Types 1 and 2 — data-grade shielded twisted-pair wire.

**Old news**  
But by late 1989, when the 16M bit/sec. Token-Ring is scheduled to appear, fiber-optic-based networks will be a primary option for connecting to and replacing both Ethernet and Token-Ring-based networks.

At the same time, today's Token-Ring users — because of the demands of remote data processing, 32-bit microcomputers and sophisticated application programs written for multitier, multi-tasking operating environments like IBM's OS/2 — will require higher speed connection for day-to-day operations.

Instead of a network backbone as IBM originally planned, under that scenario, the 16M bit/sec. Token-Ring may be best suited as a higher speed alternative to the aged 4M bit/sec. Token-Ring.

Fleig is director of systems research specializing in local-area networking and IBM communications for International Technology Group in Los Altos, Calif.

## NETWORKING

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## Colorizer

CONTINUED FROM PAGE 37

cost difference in both speed and productivity. While the video networks will be used to view images, the computer networks will be used to select colors and mark the areas for coloring. The colorists must make sure the colors are appropriate and that they do not bleed outside the intended objects.

In each of Color Systems' 18 production rooms, five Apple Computer, Inc. Macintosh 512K micros are linked into a simple serial network attached to the controller, an Intel Corp. 80186-based machine built on-site. The firm has grown impatient with slow response times caused by transmission speeds of only 9.6K bit/sec., DiCarantonio said. In addition, the Macintoshes do not have the CPU power to process 30 frames per second, a goal that is part of Color Systems' strategy to increase productivity.

"We took the first two years to set up a system and learn what it could do," Di-

Carantonio said. "Now we know what we want and how it can be improved."

When all the production rooms are revamped with the new equipment in March, one Macintosh will be used as a front-end operator console with four Iris workstations in the background to store and process the color data. An electronic diffusion system from Datacube, Inc. will be used to diffuse shapes and help artists blend colors.

A Microvax II also will be on the network, functioning as the server and router. The 10M bit/sec. baseband network requires Communication Machinery's ENP/50 boards for the Microvax, which communicate with Ethernet boards already built into the Iris computers.

"We can color in real time and animate in real time," DiCarantonio said. The improved speed of the network is also a plus for colorists, who can get immediate feedback on their work, he added. "A 10- to 12-second shot could take 15 minutes to color, and you would have to wait until you were done to see it. Now, you can see it right away."

Staying on top of your network is a big challenge. How do you transfer different file types between MVS and VSE? Or VM and PC? How do you coordinate production activities among data centers? What if they're using different security systems? Or running at different release levels?

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# SNA-PC system cuts out the middleman

BY PATRICIA KEEFE  
C9 STAFF

LAGUNA HILLS, Calif. — Network Software Associates, Inc. (NSA) has introduced a turnkey system said to link personal computers to IBM Systems Network Architecture (SNA) networks

and hosts.

NSA claimed AdaptSNA is the first product to enable IBM Personal Computers, compatibles and laptops to talk to the SNA environment without expensive synchronous hardware.

SNA does not support asynchronous, NSA said. Ordinarily,

a PC running under SNA must be equipped with a synchronous modem and an IBM Synchronous Data Link Control (SDLC) adapter, the vendor added.

However, the vast majority of IBM PCs and Personal System/2s have serial ports, NSA claimed, adding that asynchro-

nous modems are less expensive and more common.

AdaptSNA supports all major SNA communications facilities over asynchronous lines, including cooperative processing for IBM's LU6.2/Advanced Program-to-Program Communications; interactive host communications, for IBM's 3270; batch file transfers, for IBM's 3770 RJE; and specialized program-

to-program communications mode, for IBM's LU0.

The AdaptSNA line supports four different software products that run on the microcomputer to implement the desired protocol: AdaptSNA LU6.2, AdaptSNA RJE, AdaptSNA 3270 and AdaptSNA LU0.

NSA claimed each package conforms to IBM's Systems Application Architecture (SAA),

## BIT BLAST

# Net firms ally to diversify

Micom-Interlan, Inc. in Boston, Mass., and Synoptics Communications in Mountain View, Calif., have agreed to resell each other's networking products and to eventually integrate the two technologies. Micom-Interlan supplies intelligent IEEE 802.3 Ethernet controllers for a variety of systems, and Synoptics sells Lattinnet, a wiring system that reportedly implements 802.3 Ethernet on unshielded twisted-pair wiring.

Meanwhile, Micom-Interlan's parent, Micom, Inc. in Simi Valley, Calif., has agreed to purchase from Amnet, Inc. software that is the basis of Amnet's Nucleus 7400 line of packet-switching systems. Micom plans to incorporate the software into its Distributed Network Processor line in order to provide a compatible, consistently managed line of packet-switching equipment, according to the company.

Tymnet, a McDonnell Douglas Network Systems Co. subsidiary, announced last week that it will expand its product line with offerings from two other vendors. Gensaf Data, Inc.'s Starmaster and PACX 2000 data switches will be marketed under the Tym Switch label as a low-cost way for large numbers of terminals to access Tymnet's wide-area networks, the vendor said.

Digital Communications Associates, Inc.'s System 9000 multiplexer, which will also be resold by Tymnet, will provide cost-effective bandwidth management for customers who want to send a combination of voice, data and image over Tymnet private network links.

Tymnet also announced recently a synchronous 9.6K bit/sec. version of Tymdist X.25, a service that provides dial-up access to the Tymnet public data network. Tymdist X.25 currently offers 9.6K bit/sec. synchronous and 2.4K bit/sec. access to Tymnet.

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which allows software to be moved from one hardware environment to another without modification.

Pricing for the Adaptasync controller starts at \$1,995. The AdaptSNA software packages are priced as follows: LU6.2/APPC costs \$285, RJE is priced at \$785 and 3270 costs \$585. No price was made available for the LU0 package.

## VSATs

FROM PAGE 37

ried is less than 18 months." The dishes also provide a quick way to set up a T1 line for users who cannot afford to wait six to 18 months for a terrestrial line, he added. The TSAT's direct dish-to-dish links could be a breakthrough, McQuillan said, since

they eliminate the need for a hub, which can cost more than \$1 million.

Also at Comnet, Scientific Atlanta, Inc. introduced the intelligent VSAT network, a satellite-based network system said to incorporate CCITT X.25 packet-switching technology.

By employing X.25 rather than more traditional high-level data link control protocols, Sci-

entific Atlanta's VSATs can support more easily a variety of protocols, such as asynchronous standards and IBM's Systems Network Architecture, said David Fellows, vice-president of strategic operations. In addition, users can back up or extend the VSAT network by connecting it to a public or private X.25 network, Fellows said.

The network hub dynamically

allocates 56K bit/sec. channels among VSATs, dividing up a channel among a group of VSATs or dedicating the bandwidth to one terminal on the basis of need, Fellows said.

Scientific Atlanta said it will sell VSAT dishes for approximately \$10,000 and the network hub for between \$750,000 and \$1.5 million, depending on configuration. An IBM Personal Computer-based network management system featuring graphics, network monitoring and statistics collection is included in the hub price, Fellows said. The vendor also said it will offer shared VSAT services from a hub based in Atlanta in about three months.

### Battle of the bands

Two weeks ago, officials of Costel ASC, the Rockville, Md.-based satellite communications unit of Costel Corp., set forth plans to develop a VSAT data networking service that merges C- and Ku-band technologies.

The service constitutes the first fruit of Costel's recent acquisition of VSAT equipment vendor Equatorial Communications Co. and the VSAT operations of Communications Satellite Corp. (Comsat), Costel ASC said. These acquisitions give the firm at least a 60% market share in VSATs, with 40,000 stations installed, officials said.

Costel will be the first vendor to blend the complementary features of Ku- and C-band communications into one hybrid network, according to James J. Sobczak, senior vice-president of the company's newly formed Data Networks Division. The network services, which will be provided through multiple shared hubs, will be priced 15% to 35% lower than those of competitors, Costel claimed.

Costel ASC can provide data customers an upgrade path from a voice-grade network using C-band technology up to a 56K bit/sec. network using Ku-band technology, officials said. While Ku-band stations provide high data rates, the signal may fade during rainstorms, according to the company. In contrast, C-band stations are reportedly vulnerable only to terrestrial microwave signals.

Costel ASC officials said they do not plan to offer a T1 service. "Users are just now getting to the level of needing 56K bit/sec. service," said George P. Roberts, president of Costel ASC. He said the T1 market is too small and has probably already been captured by fiber-optic circuits. However, Costel, a major NEC customer, has been inquiring about the vendor's T1 VSAT system, NEC's Arcoris said.

Costel ASC said the key to the VSAT market, which it expects to grow 30% a year, is to overcome resistance from communications managers and urge them to try pilot programs.

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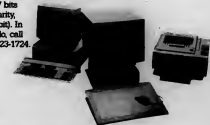
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NEW PRODUCTS

**Local-area network hardware**

A token-ring board designed for use with IBM Personal System/2 Models 50, 60 and 80 using the Micro Channel architecture has been announced by Madge Networks, Inc.

The MCA Ring Node board is said to be compatible with such personal computer network operating systems as Novell, Inc.'s Netware, Microsoft Corp.'s MS-Net, IBM's PC-LAN and Madge Networks' own Netserver.

The MCA Ring Node board carries a

price of \$795.

Madge Networks, 534 Salem Ave. N.W., Rossmore, Va. 24016. 703-982-0638.

**Network services**

ITT Corp. has added high-speed digital data capabilities to its private-line service.

ITT Private Line subscribers may now transmit data over digital facilities provided by U.S. Transmission Systems, Inc., between 12 U.S. cities at a speed of 56K bit/sec. The service incorporates local Dataphone Digital Service (DDS) sup-

plied by local Bell operating companies, ITT said.

The 12 cities are Atlanta, Chicago, Dallas, Los Angeles, Miami, New York, Newark, N.J., Orlando and Jacksonville, Fla., Sacramento, Calif., San Francisco and Washington, D.C. More cities are set to be added during the next few months.

Customers pay a flat monthly fee, averaging \$2,500, based on mileage between cities and the local DDS facilities.

ITT, 100 Plaza Drive, Secaucus, N.J. 07096. 201-330-5000.

**Customer-premise equipment**

A rack-mount card that provides desktop access to integrated voice and data com-

munications transport has been announced by Gandalf Data, Inc.

The RM 3640 DOV provides simultaneous voice and data transmission over existing private branch exchange wiring. The single-channel central rack-mount unit operates full-duplex at data transmission rates from 2.4K to 64K bit/sec. synchronous and up to 19.2K bit/sec. asynchronous. In addition, the card operates at data rates up to 5.3 million 64K bit/sec. or up to 3.4 million 32K bit/sec. in alternate mode.

Up to 14 RM 3640 DOV cards can fit into Gandalf's 3000 chassis without redundancy.

The RM 3640 DOV costs \$295. Gandalf, 1020 S. Noel Ave., Wheeling, Ill. 60090. 312-541-6060.

**Links**

An enhanced version of Co/Session, a remote personal computer-to-personal computer communication software package, has been announced by Triton Technologies, Inc.

Version 2.1 uses a data compression algorithm to increase file-transfer speed. It supports data transfer rates to 38.4K bit/sec. Support is also provided for certain 9.6K bit/sec. modems, including models from Hayes Microcomputer Products, Inc. and Racal-Vadic.

Other features include an automatic billing log; session recording; color and graphic support; password protection; and remote pricing.

Co/Session runs on IBM Personal Computers. It costs \$249 for a two-user version.

Triton Technologies, 146 Maple Ave., Red Bank, N.J. 07701. 201-741-3232.

**Modems/Multiplexers**

The Hayes Microcomputer Products, Inc.-compatible Supramodem 2400 has been announced by Supra Corp.

Supramodem 2400 has the ability to support asynchronous operation at 300, 1,200 and 2.4K bit/sec., according to the vendor.

Features include compatibility with the AT&T 103/212A and CCITT V.22 and V.22 protocols, automatic answer and dial, two modular phone jacks and a programmable volume speaker.

Supramodem 2400 costs \$179.95. Supra, 1133 Commercial Way, Albany, Ore. 97321. 503-967-9075.

An error correcting modem with an effective throughput of up to 19.2K bit/sec. has been announced by Microcom, Inc.

Designed for use with the vendor's High Density Modem System (HDMS), the HD/9624C reportedly supports Class 6 of the Microcom Networking Protocol (MNP).

It also supports the AT&T 103 and 212A and CCITT V.22 and V.22s standards, according to the vendor. Other features include the ability to emulate full-duplex transmission, automatic adaptive equalization, automatic fallback, protocol, out-of-order, redial and support for both synchronous and asynchronous data.

The HDMS supports up to 16 HD/9624C modems in a standard 19-in. chassis. HD/2400, HD/2400C and HD/9624C modems may be used in the same chassis.

The modem costs \$1,379. Microcom, 1400 Providence Highway, Norwood, Mass. 02062. 617-762-8510.

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# SYSTEMS & PERIPHERALS

## HARD TALK

James Connolly

### Wanted: A 9370 market



The time has come for IBM to pay for the dinner check or risk washing dishes for a long time.

IBM has survived on promises for more than a year as industry analysts and loyal IBM customers have looked at the IBM 9370 as an unfinished product. Observers forgave the 9370's shortcomings and compared it with DEC's Microvax I. The 9370 and the original Microvax both needed a polish through enhancements that would make the 9370 shine as the later Microvax II did.

Despite a few enhancements, the 9370 falls short of user demands. Now, the forgiving has turned into harsh criticism.

IBM admits to missing its target of 5,000 sales in 1987, and analysts are slubbing their estimates for this year.

International Data Corp. (IDC) analyst David Moschella estimates 9370 shipments numbered about 3,500 in 1987, rather than the 5,000 that IBM and IDC originally expected. IDC is cutting its 1988 estimate of 10,000 to about 7,000 systems.

Selling 7,000 minicomputers.  
Continued on page 44

## Users take hard look at 4381s

Two-stage shipments, upgrades of third generation on schedule

BY STANLEY GIBSON  
CHICAGO

The third-generation IBM 4381 processors announced nine months ago are reaching the first user sites. And despite the fact that the models are widely viewed as the last tacker in the 4381's life, customers who ordered the so-called 20 series models have reported that the small mainframes will meet their processing needs for the foreseeable future.

Users also expressed satisfaction with the two-stage shipment plan IBM announced last year, in which they took delivery of an older 4381 model for later upgrade at a discount. IBM reported that it recently began to ship the more powerful 4381 models and upgrades that were

announced last May.

Customers ordering before Nov. 30 received a 4381 Model 11, 12, 13 or 14 that is to be upgraded to a Model 21, 22, 23 or 24 this year. Those users are eligible for discounts of \$50,000 to \$70,000. IBM's announcement of shipments last month corresponded to the firm's originally stated plan to ship in the first quarter of this year.

Installed base over 5,000  
According to statistics compiled by Computer Intelligence, 115 of the new models or upgrades are on order in the U.S.; 17 were scheduled for delivery last month. According to Computer Intelligence, the U.S. installed base of 4381s in July 1987 was 5,528 systems.

A data center manager at an

engineering and manufacturing company in the Midwest who currently uses a Model 14 said he will receive an upgrade to a Model 24 at the end of this month. His upgrade is not part of the two-stage shipment plan but is an enhancement to a Model 14 that was in use prior to the announcement of new models.

"I'm expecting some kind of price action by the end of February," he said, explaining that he might otherwise have taken delivery sooner. He said he is looking for cuts of about 15% in price, based on previous IBM pricing moves. He said he will pay about \$340,000 for his upgrade and will gain about 33% improved performance. In addition to the CPU upgrade, he said, he will expand his processor's

Continued on page 45

## Encore fills low-end Unix gap

BY JAMES CONNOLLY  
CHICAGO

MARLBORO, Mass. — Encore Computer Corp. is scheduled to open a new entry point for its line of Unix-based multiprocessors today by introducing a system with half the performance of the earlier Multimax 320.

The Multimax 310 has a base price of \$89,000, compared with \$143,000 for the year-old Multimax 320, and is being positioned by Encore for commercial applications such as transaction processing and time-sharing. The Multimax 310 uses the same core technology as the Multimax 320 but is offered in a smaller package with more limited expansion capability.

"It makes new markets available to us, the multi-user commercial marketplace where people want a system for under \$100,000," Encore Vice-President for Marketing Frank Pato said in a recent briefing.

In addition to being aimed at the Unix market, Pato said the

Continued on page 44

## Data View

Lessors' market

Lending and leasing give a multifaceted acquisition options



INFORMATION PROVIDED BY A DATAVIEW BUSINESS CORP. USER SURVEY  
NEW CHART

## Ametek adds processor

ARCADIA, Calif. — The Ametek, Inc. Computer Research Division recently claimed breakthroughs in node-to-node communications technologies with the introduction of its second-generation hypercube-type parallel processor.

The Ametek Series 2010, which succeeds the first-generation Ametek System 14, uses four 20M byte/sec. channels to allow each computational node

Continued on page 44

## Inside

- Nixxon announces memories for DG Eclipse, MV computers. Page 46.
- Toshiba America rolls out 24-pin dot matrix printer. Page 46.

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## Connolly

FROM PAGE 43

ers would have any other company shopping for fleets of Microcode sports coupes.

Mochella notes that if IBM had promoted the 9370 as a successor to the company's 4361, it would be considered a winner. But IBM positioned the 9370 as more — as the way for big companies to distribute processing — which means now IBM must make the same pitch with what it calls its System/3X follow-on.

Mochella says the 9370 failed to impress large companies — the segment in which IBM wants the system to distribute mainframe applications. He

says major sales contracts for hundreds of 9370s are unlikely until IBM cleans up the system's image.

**Shortcomings cited**  
Today, analysts like Mochella find the same failings in the 9370 that they graciously cited a year ago.

Mochella says there is little 9370-specific applications soft-

ware, particularly under the development-oriented IBM VM. He also notes that IBM boasts the 9370 as a VM machine despite the fact that data centers tend to use IBM MVS in production.

In addition, VM remains complex for unsophisticated users, so a systems programmer is needed for tasks such as software updates.

Mochella also says the 9370's range of performance is too narrow. He cites the case of a potential buyer who was considering the two mid-range models in the 9370 line but realized that his growing needs would force him to make an expensive conversion to the 4361 family next year.

So if the big systems users are avoiding the 9370, who is

buying it? The most likely group is the 4361-type of user running IBM DOS/VSE. "It isn't what IBM wanted, but these guys who have been running things like 4361s suddenly have themselves a neat new DOS machine," Mochella notes.

Connolly is *Computerworld's* senior editor, systems & peripherals.

## Encore

FROM PAGE 43

Multimax 310 is intended as a strong offering in the Pick Systems Pick environment.

One analyst noted that the Multimax 310 improves what already appeared to be good price/performance figures for Encore systems but questioned the amount of interest in Unix for commercial computing.

Marty Gruha, vice-president of The Sierra Group in Tempe, Ariz., said, "If what they say is true, it's hard to believe their systems aren't selling like hotcakes."

Gruha said her firm's studies show little user interest in commercial Unix because of the lack of Unix-based software solutions on the market today.

Encore claimed the Multimax 310 can handle 4 million instructions per second (MIPS) in a two-processor configuration and 30 MIPS in a 10-CPU system.

## Ametek

FROM PAGE 43

to communicate with other nodes. Ametek officials claimed that the 2010, which can be configured with up to 64 nodes, overcomes performance degradation problems associated with routing messages among nodes in other hypercube systems.

Designed in conjunction with scientists at the California Institute of Technology, the 2010 uses Motorola, Inc. 25-MHz 68020 microprocessors and Motorola 6881 floating-point units. Motorola VMEbus interfaces are available.

The 2010 is intended for use in various scientific and engineering applications and features Unix file compatibility. It is scheduled for beta testing during the third quarter and production delivery in October.

Prices for a four-node system start at \$45,000; a 64-node system starts at \$495,000.

## Plug in Ventura and all these plug.

You're probably well aware that Xerox Desktop Publishing Series: Ventura Publisher Edition, is, as industry and computer magazines put it, the clear leader in the MS-DOS publishing world. But, will it plug and play with your equipment and software, or with the equipment and software you intend to buy?

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IBM/GRAPH—Eaton  
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International, Inc.  
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Cal

## 4381s

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memory from 32M to 48M bytes.

Richard Harkness, data processing director at Hickory Chair Co. in Hickory, N.C., said he ordered a Model 22 under the two-stage shipment plan. He received a Model 12 in July and

said he will receive a Model 22 by the end of March.

Harkness decided to purchase a 4381 before the new models were announced, believing that a Model 13 or 14 would provide the amount of power he needs. But when the new models and two-stage shipment option were announced, he opted for a Model 12 with an upgrade to a Model 22. He said he received a dis-

count of the amount announced by IBM, but he declined to name a specific figure.

The new 4381 at Hickory Chair replaced two IBM 4341 processors, both of which ran IBM's DOS/VSE. The 4381 is running IBM's VM with DOS/VSE as a guest. Harkness said the Model 22 will be sufficient for his near-term needs and that he has no plans to upgrade

to a Model 24.

An MIS manager for a West Coast insurance company said his firm will not take the upgrade but is instead mulling over a move from his 4381 Model 14 to a used IBM 3081 or a new IBM 3090. Eighteen months ago, his firm upgraded from a 4381 Model 2 to a Model 14, boosting power from 2.9 million to 6 million instructions per second.

William McKinley, director of MIS at Kent State University in Ohio, was running a 3081 and sought to add another. However, when the new 4381s were announced, he said, he was attracted to them — in part because, as an educational institution, he receives a 25% discount from IBM. The two-stage shipment plan and discount were also welcome, McKinley said.

"It was an interesting deal. It fit with our plans," he added. McKinley got a Model 14 in August and said he expects to receive the Model 24 in March or April. "I see three years' daylight with this," he said, indicating that this time span is ample given normal capacity planning requirements.

## First In Line

IBM said that the MacNeal-Schwendler Corp. in Los Angeles is the first customer to take a model in the new series. MacNeal-Schwendler, a participant in IBM's Industry Marketing Assistance Program, will use the machine to develop software for mechanical computer-aided engineering applications.

According to Mary Caetta, chief of information systems at MacNeal-Schwendler, the processor, which will contain 32M bytes of memory and 7G bytes of disk storage, is not part of the two-stage shipment plan.

The company plans to run IBM's MVS/XA and VM/CMS on the processor. MacNeal-Schwendler considered purchasing an IBM 9370 for use in development but decided against it because the 9370 cannot run MVS/XA, Caetta said. A user of IBM data centers in the past, MacNeal-Schwendler sought the convenience of its own in-house processor, she added.

Jack Tyler, director of data processing at Mississippi Valley Gas Co. in Jackson, said he received the first half of his two-stage shipment, a Model 12, in December. Tyler said he expects an upgrade to a Model 22 to arrive at the end of August. Tyler, who will run DOS/VSE, said he will not expand his Model 12's memory from 16M bytes when he gets the upgrade.

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requires XT power. It is also the first desktop publishing program to support all industry-standard page-description languages, including PostScript and Interpress. That means total compatibility with all popular laser printers, including, of course, the Xerox 4045 Laser CP and the Xerox 4020 Color Ink-Jet Printer.

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## NEW PRODUCTS

## Processors

Nemonts, Inc. has announced its NXMV-Series memory for Data General Corp. Eclipse and MV series computers.

The memories are available in 2M-, 4M- and 8M-byte capaci-

ties and are said to be completely hardware- and software-compatible with the DG systems. The NXMV-Series memory has 32-bit words and 7 bits for error-correction control. Pretested 150-nsec, 256K-byte dynamic random-access memories are incorporated in the board design.

Included in the memory is Nemonts' memory diagnostic.

The NXMV-Series is priced from \$11,500.

Nemonts, 106 South St., Hopkinton, Mass. 01748. 617-435-9087.

## Graphics systems

A high-resolution desktop digital image setter has been an-

nounced by Itak Graphic Corp.

The IGX 7000 LED is said to use LED technology to output both text and graphics. It features a modular raster image processor design, output of 1,800 dot/in. and an output speed of up to 500 line/min.

According to the vendor, the image setter is capable of outputting conventional paper and

film material as well as pressure-ready direct-to-plate masters.

The IGX 7000 supports the Itak Graphic Personal Typesetting Workstation personal computer-based composition system. It is compatible with Xenon Corp.'s Ventura Publisher software and supports output to the vendor's IGX 400 laser printer.

The IGX 7000 costs \$32,995.

Itak Graphic, 34 Cellu Drive, Nashua, N.H. 03063. 603-889-1400.

## Printers/Plotters

Wavetek Corp. has introduced the Model 54 42-col. thermal printer for use with its 50-Series Data Logging Measurement System.

The printer is said to print at 5.6 line/sec. It contains a 7,176-byte first-in/first-out buffer and can print in text or list mode. Text mode prints each line below the previous one, and list mode prints each line above the previous one.

Other features include graphics capabilities like bar-chart generation, four print fonts and automatic shuttling.

The Model 54 printer costs \$1,195.

Wavetek, P.O. Box 85265, San Diego, Calif. 92138. 619-279-2200.

The Information Systems Division of Toshiba America, Inc. has introduced a 24-pin dot matrix printer called the P3515X.

The printer offers a 360 by 360 dot/in. graphics capability and a 360 char./sec. draft print speed. Letter-quality print speed is 120 char./sec.

Paper-handling features include support for up to six-part forms and automatic envelope printing with an optional envelope sheet-feeder. Dual bidirectional tractors are built in, and built-in buffer capacity is 32K bytes.

The P3515X costs \$1,499.

Toshiba America, 9740 Irvine Blvd., Irvine, Calif. 92718. 714-380-3000.

## Input devices

A document scanner capable of scanning 64-in. by roll-length documents has been announced by Ana Tech Corp.

The Eagle 6050 allows conversion of line art drawings, including large-format lofting drawings, into computer-aided design or industry-standard raster formats. Features include a patented single drive and a continuous-feed roller that accepts paper, mylar, vellum or film. It can scan at a speed of 5.7 in./min at an actual resolution of 500 line/in.

The Eagle 6050's price starts at \$90,000. Ana Tech, 10499 Bradford Road, Littleton, Colo. 80127. 303-973-6722.

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# EXECUTIVE REPORT

APPLE GROWS UP

## Getting to the core of the new Apple

BY GLENN RIFKIN

**T**he new Apple Computer, Inc. ads appeared in *Computersworld* and other trade publications last November. The headline, "MIS manager buys Macintosh, keeps job," bespeaks the corporate vision that is now driving Apple. And it is not simply that Apple is serious about MIS: MIS is now serious about Apple.

Buzzed at last by the performance respectability of the Macintosh Plus and Macintosh II, increasing functionality in networking and communications and the announcement two weeks ago of a development alliance with Digital Equipment Corp., Apple is finished with sneaking into corporate America through the service and delivery entrance.

Desktop publishing, acting as the Trojan horse, got Apple into hostile territory, and now the company owns 10% of the corporate personal computer market. Apple management says owning 30% by 1990 is a realistic goal.

There is, of course, plenty of room for skepticism. Those with a good long-term memory will remember how the \$10,000 Apple Lisa was going to win over big business. And in November 1984, a *Business Week* cover featured a chummy, laughing John Sculley and Steve Jobs clad in flannel shirts and jeans. The dynamic duo were revealing their "bold plan to take on IBM in the office."

Unfortunately for Apple, the plan was premature and based on flimsy business premises. Apple not only did not have the hardware that an MIS manager could take seriously, but it also lacked the internal mind-set to attack that market.

Rick Young, senior industry analyst with Dataquest, Inc. in San Jose, Calif., remembers those days when he worked in systems at The Boeing Co. in Seattle.

Rifkin is a senior editor at *Computersworld*.



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stle. "Apple would come in with the Macintosh and say, 'Isn't this wonderful? How can anyone not like this?' And when they left, they'd get bashed by the people in MIS," he says.

**Jobs leaves; tide turns**  
Jobs' celebrated departure from Apple in 1985 did more than provide good copy for Sculley's tell-all memoirs. It allowed Sculley to get down to the business at hand,

which in this case was business. Big business.

According to Apple watchers, Sculley went out on a limb, backing off from the consumer market to continue the quest for corporate business in the face of what seemed like insurmountable odds. The toughest job of all, perhaps, was reshaping the company — changing the perception of Apple as a Land of Techno-Oz to that of a serious,

big-time computer supplier for business.

Unquestionably, Sculley has steered Apple onto the right track in a remarkably short time. Just last month the company announced record sales and profit for the second quarter in a row — its revenue increased 57% to \$1.04 billion, compared with \$662.3 million a year ago.

Turning around the fortunes of a corporation the size of Apple in two years is more than just noteworthy; it is the stuff of which business legends are made. And Sculley, who in the past 12 months has been on the cover of virtually every U.S. magazine except *Field & Stream*, is more than enjoying his celebrity status.

But Apple must keep things in perspective. "They haven't won anything yet," says Esther Dyson, editor and publisher of the "Release 1.0" newsletter. "They've just managed to stay in the game."

"They've gotten a certain percentage of the way along, but they're still missing a few key elements in selling to MIS," adds Amy Wahl, a consultant in Bala Cynwyd, Pa.

However, Apple recently filled in one of those holes by allying with IBM's strongest competitor, DEC. Driven by user demand for software links, the two companies' recent agreement formalizes what had been an unofficial alliance.

Since then, Sculley and DEC President Ken Olsen — an unlikely pair of chief executive officers — have shared podiums from coast to coast. Olsen attended the announcement of the agreement at Macworld Expo in San Francisco on a Friday. Then Sculley appeared with Olsen at a DEC briefing in Boston the following Tuesday.

Although few details are currently available, the joint development will involve software links between the Macintosh and DEC's VAX — links that users have recently been asking for and forging themselves in some cases.

The two firms also plan to address products for distributed

## Core

FROM PREVIOUS PAGE

applications methodology, network management, networking, file sharing, document interchange, data base and terminal emulation.

It is clear that the alliance will benefit Apple much more than DEC. More VAX users are likely to see the reason to now buy Macintoshes than current Apple users will see the benefit of buying the more expensive VAX.

The deal with DEC reflects



## Apple's new faces

The new faces at Apple Computer, Inc. come not from a hacker's garage or even other personal computer makers but from large corporate environments that heretofore were not feeding grounds for the Cupertino, Calif., company. The following is a sampling of the executives who have recently joined John Sculley's crusade at Apple:



**Charles Boesenberg, 38**, senior vice-president and group executive for U.S. sales and marketing.

Boesenberg went to Apple after leaving Data General Corp., where he was vice-president and general manager of operations for Europe, the Middle East and Africa.

Prior to working at DG, Boesenberg spent 10 years with IBM in various sales and marketing management positions, including the National Marketing Division.

Boesenberg is responsible for developing and implementing sales and marketing strategies for all Apple products. He joined the company in January 1987.

**Harry Copperman, 40**, vice-president and general manager of Apple's Eastern Operations Group.



Copperman joined Apple after 20 years of sales and marketing at IBM. He was most recently IBM's director of marketing for higher education.

Copperman currently heads one of Apple's three geographic sales regions. Each group is individually responsible for a series of sales, support, training and management.

Boesenberg joined Apple in September 1987.

**Allan Loren, 49**, vice-president of information systems and technology.



Loren spent 16 years at Cigna Corp., one of the world's largest insurance companies, before joining Apple last September.

He is responsible for all information systems management at Apple and also interacts with the company's sales and marketing staffs for product development.

**Joseph Schoendorf, 43**, vice-president of marketing. Schoendorf joined Apple in November 1987 after leaving Ungermann-Bass, Inc., a supplier of local-area networks based in Santa Clara, Calif.



Prior to working at Ungermann-Bass, Schoendorf spent 18 years with Hewlett-Packard Co. in various sales and marketing management positions.

Schoendorf is responsible for Apple's strategic marketing group.

**Kevin Sullivan, 45**, vice-president of human resources.



Sullivan came to Apple after leaving Digital Equipment Corp., where he spent 13 years in a variety of senior personnel management positions.

He joined Apple in April 1987 and is currently responsible for all of Apple's human resources functions worldwide.

GLENN RUPKIN

says Kirk Loeferer, Apple's manager of U.S. product marketing. "People here still think we can change the world, but we're more mature about how you do it."

### No fooling around

But while Loeferer and Apple's marketing staff go after new applications—such as training and scientific/engineering applications—as well as new vertical markets like the financial sector, the key issue may well come back to Apple's culture change. Innovation, after all, has been the company's watchword, and without it, Apple offers less than a clone company does.

And Apple has indeed changed, from counterculture to corporate culture. The T-shirts and beer blasts may continue, but the motivation at the company is now the same as at Ford Motor Co. and IBM: to increase profits and grow.

"There are a lot more MBAs running around Apple," Wohl says. "Of course, I'm not sure how good that is."

Still, people like Everhart and Charles Boesenberg, senior vice-president and group executive for U.S. sales and marketing, point out that they left their large-systems environments not to come in as evangelists but as pilgrims.

"The people who came here with big-business backgrounds didn't come to try to show Apple, 'OK, you dummies, this is how it's done,'" Everhart points out. "I came here because I saw the chance to truly participate in the formation of what Sculley calls a third-wave company—to do things differently than DEC or IBM did them."

And Sculley is intent on not letting up on that. While R&D is funded to the tune of \$250 million, freethinkers like Bill Atkinson, developer of Hypercard, and Allan Kay, designer of the Smalltalk programming language, are still encouraged to sit on mountaintops, gaze at the stars and come up with third-wave ideas.

Some longtime employees, like Vice-President of Market

Development Chuck Berger, who has been at Apple for six years, admit that the company has changed. The freethinking, he says, is now directed toward what Apple is trying to accomplish as a company rather than being totally random.

"There's definitely not as much time to sit around and brainstorm ideas as there used to be," he says. "But the structure that we've added around here actually frees up a lot more bandwidth to think of creative products and marketing."

**Apple's wary**  
Around Silicon Valley, the word is that, though Apple is changing, R&D is still the wild and crazy place it always was, and as long as that stays intact, the ties to the past are secure.

"People have been saying that Apple is changing since Sculley walked in the door 3 1/2 years ago," says Guy Kawasaki, a former Apple software developer and current president of Acus, Inc., a software company in Cupertino, Calif. "I don't think it's changed that much."

Kawasaki reports that Steve Cope, a member of the original Macintosh development team, recently rejoined the R&D group after a two-year absence. "A guy like him would never have gone back there if it was just blue suits. It may be like it was, but it's still the funnest place in the valley."

For notwithstanding, the mixing of two cultures has had an impact. The bureaucracy continues to grow. No matter how open-minded the environment, there is a limit to how many engineers can walk directly into Sculley's office to pitch their ideas.

But as the cultural crossover continues, the new employees—at least the ones hoping to survive and thrive—are acutely aware of the need to preserve

the Apple way.

"When I think about reorganizing or restructuring something, I stop and say, 'Will that screw up the Apple way? Will that keep [up] the entrepreneurial way things are going?'" Everhart says.

"You take a 3-year-old running around the room filled with fire and enthusiasm, and he may come up and stick his tongue out at you and it's cute. If a 15-year-old comes up and sticks his tongue out at you, this child may have some problems. You've got to change your behavior patterns."

"But what you would hope you see in the 15-year-old kid is the same fire in his eyes as the 3-year-old has," Everhart continues.

us, "even though he's learned not to stick his tongue out at people."

Apple is clearly not sticking its tongue out at the world of big systems anymore. Words like connectivity, SNA and networking used to be taboo at the company, but no longer. A potential customer now hears language from Apple that is reminiscent of companies like DEC, IBM and Wang.

And somehow, Apple hopes to retain its focus on the individual user while embracing the network. The game plan is to see the world from the PC out rather than from the mainframe in.

Apple says it can accomplish its goal by continuing to improve

Continued on page 51

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## Information Systems and Technology

### System 38 Applications Programmers

You will design programs, database, and code programs run on the System 38 and written in RPG III. You'll need a BA/BS and 1-3 years of RPG III experience. A background in fourth generation language is a must. Reply to Dept. KA-CW1.

### Macintosh™ Programmers

You'll help develop a state-of-the-art network-based information system that will impact the way business does business. You'll need 5-10 years in software engineering with in-depth, recent experience on the Macintosh. Extensive development background in C and exposure to 68000 assembly are also required. Reply to Dept. ETCW2.

### Senior Business Analysts

Working with Project Management, you will perform business analysis, identify business requirements and functional specifications, and prepare documentation, training and rollout implementation. You should have a BA/BS, at least 5 years' experience in system analysis, and excellent communication skills. Reply to Dept. ETCW3.

### Data Modeller

You will develop data models of Apple's business operations, implement corporate data models and provide consultation to our MIS Application Development teams for local data. You must have 3-5 years' experience in producing data models with automated software tools, as well as in-depth knowledge of finance, manufacturing, sales and distribution. Reply to Dept. KA-CW4.

### Network Design Engineers

You'll need a BS in EE or CS with at least 3 years of experience in designing large corporate telecommunications networks. Experience in several of the following is needed: satellite, microwave, T1 fiber optics, X.25, DecNet, SNA, voice and video. A background with PBX systems, LANs, various transmission media and integrated communications is also required. Reply to Dept. KA-CW5.



## Peripheral Systems and Products

### Senior Design Engineers

#### Floppy Disk Drive Controller

You will design floppy disk drive interface ICs for vendors making second generation drives, as well as test and evaluate next generation floppy drives. You should have an MSEE (MScS) or BSEE with strong design experience in acceptable) and 2-5 years of disk drive controller design experience. Reply to Dept. CE-CW6.

#### Hard Disk Drive Controller

You will work with IC designers on a new chip for a very unique and new controller. You should have an MSEE and 5 years' experience designing hard disk drive controllers. Reply to Dept. CE-CW7.

### Magnetic Head/Media Specialist

You will characterize vendor's heads and media electrically and mechanically, perform simulation to make recommendations to vendors and qualify floppy disk media. You should have a BS or higher in electrical engineering or physics and 8-10 years' experience in designing magnetic recording heads for hard disk drives. Reply to Dept. CE-CW8.

### Floppy Disk/Tape Back-Up Engineer

You will be responsible for project management of tape drive products from product conception through completion. You should have 5-10 years' electronic design

experience and a BSEE, MSEE preferred. You must have experience in magnetic recording, digital tape drives or equivalent, plus knowledge of drive IF (e.g. ST506, SCSI), data encoding and drive controllers. Reply to Dept. CE-CW9.

### Peripheral Project Manager

You will take products from the investigation phase through production start-up. You must have a BS in a technical discipline (an MS or MBA is a plus), 2+ years' design experience in peripheral product development, 5-5 years' experience in managing product development across functional areas, and you should understand Apple products and the development process. Reply to Dept. CE-CW10.



## Product Design

### Product Design Engineers

You'll be involved in product design at every stage of development, from concept to finished assembly. You should have 4 years in mechanical development of electronic products. Consumer products experience is valuable. A BS in Industrial Design is acceptable; a BME is preferred. Reply to Dept. CE-CW11.



## Software Development

### Datacom Software Engineers

You'll need experience with one or more of the following: i867 emulation, 3270 datastream, VT220/240 emulation, SDC, DBS08. Reply to Dept. BH-CW12.

### Networking Software Engineers

You must have Macintosh programming experience, low-level system software and networking skills, plus knowledge of drivers and protocol implementations. Reply to Dept. BH-CW13.

### UNIX® Software Engineers

You must have experience in UNIX kernel development, device drivers, utilities, NFS, and communications. Reply to Dept. BH-CW14.

### Printing Software Engineers

You'll need knowledge of text editors, printer/ploter drivers, page description languages, desktop publishing or business forms software design; Macintosh program ming experience very helpful. Reply to Dept. BH-CW15.

### Macintosh to Mainframe Software Engineers

You'll need experience with Macintosh programming, 3270 communication software links and have knowledge of IBM, SNA, and LAN network protocols. Reply to Dept. BH-CW16.

### Operating Systems Software Engineers

You'll do file system development for Macintosh OS. You must have experience with multi-tasking OS development, device drivers, 68000 assembly, C, or Pascal. Reply to Dept. BH-CW17.

### VMS Systems Software Engineers

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based in Berkeley, Calif.

Apple spun off its software development group into a separate business unit called Claris Corp., which last month released the first batch of products that fall under its own logo. Consultants like Wohl say Apple will cut the unsolicited cord and let Claris strike out on its own in the not-too-distant future in order to ease fears among Apple's third-party development community.

#### Big enough for both

Apple knows full well that it cannot wipe clean millions of desktops and refile them with Macintoshes. It is intent on hooking into both the MS-DOS and OS/2 worlds with packages such as Apple File Exchange. In fact, with that effort in mind,

last month the company began shipping AppleShare PC, a software product that integrates both MS-DOS and Unix into the Mac environment.

Apple is also pointing out to MIS that in OS/2, IBM has done Apple two favors: By emulating its graphical user interface, IBM legitimizes everything Apple has been preaching during the past four years, and by opting to create a standard beyond MS-DOS, IBM has signaled to the world that there will be multiple standards on the desktop. Enter Apple.

"We've proven to MIS that it is going to be a multivendor, multi-operating-system environment. Their best move in that situation is to find the best vendor for each specific area in which they need microcomputer technology. And right now,

we have a complete solution," Apple's Berger says.

But while Apple has clearly gotten the MIS religion, it has some gaping holes to fill before the converts will rush to join it. According to Wohl, Apple must decide whether it is a systems vendor.

If so, it needs to find a systems integrator, a la DEC or Wang, to help it meet that end (see story page 40).

For what Apple is seeking in big business, that type of savvy might not be necessary, although it certainly would be helpful. Apple executives say the company can grab its desired portion of the corporate desk top without becoming a mainstream systems vendor.

Michael Homer, director of business development at the company, says Ap-

ple's size and flexibility make it able to respond to customers' product needs faster than larger rivals.

"We can tell product development what a customer wants and get projects started within two months. The process is incredibly short," Homer says. And in a world where strategic advantage can disappear quickly, MIS welcomes that agility.

Apple has also benefited greatly from the grass roots movement among corporate users to marry VAXs and Macintoshes. Apple is selling vigorously into DEC accounts, and DEC and Apple sales representatives are reportedly collaborating on many sales, an activity that will likely increase significantly with the new agreement.

#### No three like the present

Apple knows that it takes a long time to turn perceptions around. Its biggest concern is that MIS understand the added value the Macintosh offers over the IBM Personal Computer and Personal System/2.

The drums have been beating out the message: What IBM only promises — OS/2 Extended Edition and Presentation Manager-type capabilities — Apple al-

## Would Your Computer Talk to Strangers?

ONCE users try a Mac Plus or Mac II, it is difficult to wrest them away. The machines tend to form an organization like rabbits.

ready too, and in superior quality. The Macintosh II already offers the processing power of the Intel Corp. 80386 chip, and, overall, the Mac II's Motorola, Inc. platform is far superior to the Intel platform in the wondrous world of graphical interface.

In fact, according to Stewart Alsop, editor and publisher of "PCLetter," an industry newsletter in Redwood City, Calif., the perception is that IBM is now responding to what Apple is doing rather than vice versa.

"This gives Apple a legitimacy beyond any fancy technological capabilities," Alsop says. "It gives Apple the legitimacy that Xerox had in the '80s and that DEC still has. Apple is a status symbol in the corporate setting."

But most MIS managers don't contract Mac fever, simply because they do not use the machine. And when they hear IBM is on the way with similar capabilities, regardless of whether those capabilities match up, they are willing to wait it out.

"The more the IBM PC starts to look like a Macintosh, the easier it is for the MIS guy to say, 'We don't need to look that way anymore,'" Wohl says. "The window isn't closing, but it's getting smaller."

Nonetheless, Apple's technology is seductive. Once users try a Mac Plus or Mac II, it is difficult to wrest them away. The machines tend to multiply in an organization like rabbits.

The massive software development going on for the Macintosh, along with such innovations as Hypercard and MultiFinder, make Apple well accepted as a second standard. And for now, Apple is content with that. ■

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## Productivity tools sit idle

Software turns into expensive 'shelfware' when programmers shun new development packages

BY ROGER PHILIPS

**D**espite management's best intentions — and more than \$300,000 in license fees — a Texas-based aerospace company was unable to convince its programmers to adopt a major new productivity tool. One influential project leader took every opportunity to throw cold water on the product, swaying the entire staff. At the conclusion of the initial project, the product was quietly shelved.

Atlantic Richfield Co. in Los Angeles took a survey and found it had accumulated more than 100 software productivity products and was still paying maintenance fees for all of them. In frustration, management decreed that before any new tool could be brought in, at least two existing products had to be dropped.

How can organizations avoid the "shelfware syndrome"? After automating end-user departments for all these years, MIS's desire to automate itself is strong. But just like their end users, MIS departments need planning and discipline if automation programs are to succeed.

A large part of the job of many development centers revolves around evaluating, selecting, implementing and installing new productivity products. Yet few customers are satisfied.

James F. Sutter, vice-president and general manager of information systems at Rockwell International Corp., voices the typical frustration. "These products all sound good when you're

Philips is the founder of Philips Associates in Scottsdale, Ariz., consulting in developing, managing and marketing computer-related products. He is the former president of Transcom Logic Corp., an IBM systems software vendor.

talking to the vendor. But many times, you install them and go back a year later to find they didn't live up to expectations — or worse, they're not being used."

### Does Milky like it?

Just giving the staff more tools does not necessarily make its life easier. A survey of 149 managers of IBM MVS installations conducted by Dialogic Systems Corp. in San Jose, Calif., shows that the four most frequently asked questions when evaluating productivity tools are the following:

- Does the solution specifically address the work load problems I need help with?
- Do the gains in accuracy and speed justify the cost of the purchase?
- Are the reliability, availability and service levels consistent with my expectations?
- Most important, am I convinced my programmers will use the tool after purchase?

Several additional questions, including the following, did not make the Top 10 but should have:

- Is relieving a productivity bottleneck in one phase of the development cycle merely going to move it somewhere else?
- Can the product address more than one phase of the software life cycle? For example, with maintenance absorbing the majority of resources in most organizations, products such as Visio, Inc.'s Vis/Insight, which supports both maintenance and development, might hold special appeal.

Once these questions have been satisfactorily answered, the usual preacqui-

sition diligence must be observed. When checking references, be aware that products in the computer-aided software engineering (CASE) arena tend to be complex. Only after using a CASE product for six months or more can an organization really begin to know whether the product will work satisfactorily in its environment.

Ask the vendor for contact people from its most- and least-satisfied customers. But don't stop there. Dig out at least two references on your own, without the vendor's help. Do not proceed unless you get glowing reports from at least a majority of experienced users.

Also, consider the fact that you will be married to the vendor

for a long time: Investigate accordingly. Review the company's financial history and outlook, but also take time to research its plans for the future of the product line.

You do not need to limit yourself to buying from the financially strongest: In this industry, the best innovations often seem to come from start-ups.

Finally, scrutinize the documentation with an ulterior motive. An organization that strains for perfection in its documentation is likely to do the same in its software. Find out, as an added bonus, if the documentation is available in machine-readable form. Many analysts and programmers like to be able to search and review product documentation on-line using the same editor they use for software development.

Although CASE products are targeted at many phases of the software life cycle, the preponderance of tools are aimed at development and maintenance programming. Yet there seems to



- Programmers' first impressions last
- Beware the moving bottleneck
- Five special buying considerations

be a natural resistance among programmers to learn and use these tools.

In interviewing nearly two dozen large companies and government organizations about programmer productivity tools recently, I discovered one outstanding factor. The success of a tool was tied directly to the programmer's first impression of it. If programmers liked it initially, it got used; if not, it quickly became shelfware. And in most organizations, most tools did not pass the programmer popularity test.

What are the reasons for this unhappy occurrence? Are programmers just perverse individuals who don't want any part of the future? Hardly.

#### No time for technology

Consider the working environment of the typical programmer. His attitude is natural fallout from the way we define his job. He works under tight deadlines on one or more complex tasks, all of which impact the rest of the organization in some way. Most programmers are acutely aware of two imperatives: If they don't finish their part of the job on time or if the program they are working on blows up in production, bad things will happen. This makes for a conservative, get-out-of-my-way-and-let-me-do-the-job approach.

This same programmer is probably already making good use of important productivity tools: an on-line editor, perhaps a test data generator and maybe a batch simulator for testing on-line systems.

The question is, How many different complex tools can an individual reasonably be expected to master at any given time? While each new tool promises benefits, each has its learning curve and requires continued training time to stay current as it evolves with technology. Clearly, there is a theoretical limit to the number of products one person can know and still get work done.

#### Those who can, teach

There are two answers to this dilemma. The weaker but more practical one is to develop tool specialists who can tutor, coach and generally hand-hold a programmer or analyst through the occasional use of a particular tool. However, this approach has its limits. Tying up two professionals on a task that requires only one quickly defeats any productivity gains the tool has to offer.

A better answer lies in the software products themselves. We might wish that just one vendor could provide all the best tools. But in many environments, you need to choose tools from different vendors to find the best one in each category. Then, the programmer or analyst must put up with a variety of nonstandard interfaces and programming conventions as he moves from tool to tool. Furthermore, when the work produced by one tool could naturally feed the next, programmers still have to do manual input.

The single-vendor solution is not likely to happen soon, although system software companies such as Computer Associates International, Inc., Sage Software, Inc. and Visoft are beginning to integrate a suite of tools for easier use.

Another approach is a developer's workbench. Using a software shell, all available CASE tools are presented to the analyst or programmer in a uniform and natural way. Designed right, the workbench greatly reduces the learning curve for new tools.

While appealing theoretically, this idea has proven difficult in practice. Rex

**T**HE SUCCESS of a tool is tied directly to the programmer's first impression of it. In the majority of organizations, most tools do not pass this test.

Winner of TWA, who is also chairman of IBM's Guido Cobol Committee, predicts that no mainframe programmer's workbench will be a commercial success. "The JCL generation feature, which is the heart of these systems, is too unique" to be standardized into a commercial product, he says.

Many programmers have developed their own workbenches, but these home-grown efforts have, for the most part, failed to meet the objectives listed above.

Perhaps the ultimate answer lies in a yet-to-be-developed technology, a "developer's expert." Theoretically, this product would analyze each step of the development or maintenance process as the programmer goes along. The expert would then prompt the programmer or be prepared to respond to inquiries at any point with suggestions on which tool to use next and how to use it.

The technology to develop such a system is just becoming available now, with

products such as Aion Corp.'s mainframe expert system shell.

These latter solutions are not available yet, but watch for them. In the meantime, what can you do to garner staff acceptance and successfully install and use productivity products?

When Minneapolis-based IDS Financial Services, Inc. installed CGI Systems, Inc.'s Pachess application generator, the company found programmer resistance so strong that management brought in a select group of contract employees whose one and only job was to use the product and make it work. This approach proved successful, but IDS later spent considerable time training the regular staff in using Pachess.

Another organization chartered its





own public relations group to sell a new tool to its programmers. These are extreme tactics, but they contain the seeds of insight.

#### Choose your psyches

There are other, more practical ways for managers to set staff expectations prior to product introduction. Daniel Couger, assistant professor at the University of Colorado at Colorado Springs, tells of managers from two different companies who introduced the same code generator product to their staffs. Both organizations had a large application development backlog. The first manager took this tack:

"Each of you should be able to produce more code in less time with this tool. However, I don't expect more lines of

code output from you. I expect you'll spend more time in up-front analysis and will produce better quality systems that will require less maintenance. That way, we can catch up on the backlog."

The second manager issued the following edict: "In order to attack the backlog, you are each now expected to develop 10% more code per month using this new tool."

As you might expect, manager No. 1 enjoyed success; No. 2 did not.

Here we see how a productivity product should and should not be introduced. Planning is important, but attitude is key. When a product is introduced, each programmer or analyst naturally asks himself, "How will this product affect my job, and do I want to see it succeed?"

When it came time to introduce Transform Logic Corp.'s Transform application generator to his company, Darryl White, vice-president of information systems at Phoenix-based Ramada, Inc., borrowed a page from Mark Twain's *The Adventures of Tom Sawyer*.

He let it be known that only the best programmers would be allowed to use the product. Soon, a line formed outside his door of people who hoped to be approved as one of the first users of this exciting new technology. The introduction, as you might expect, was a success.

#### The payoff

Other planning considerations are needed to avoid unpleasant surprises, set a positive attitude and help ensure a payoff in

the software investment.

**Budgeting.** The initial license price of the software typically represents only one-third to one-half the total cost of implementation. Budget accordingly.

**Contract negotiations.** Surprisingly, many of the vendors' and customers' expectations — both financial and nonfinancial — never find their way into the contract. Contract negotiation is the best time for your needs to be clearly understood by both parties and committed into writing.

**Acceptance.** To trial or not to trial? Most productivity software is bought on a trial basis. In many instances, this is a mistake. It sends a message to the staff that management is not really committed to this product, which often dooms it to failure. Most CASE tools will not show their true worth until after many months of use, anyway — longer than most vendors would agree to a trial. If you do your refer-

## What ISDN is doing for McDonald's data networking capabilities is no small potatoes.

When McDonald's Corporation took a hard look at its telecommunications needs a few years ago, it saw 9400 restaurants in 46 countries, served by more than 20 networks. And a new restaurant opening every 17 hours.

McDonald's needed a telecommunications system that could grow with it, but one simple enough that the company could concentrate less on telecommunications and more on talking to customers.

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McDonald's will use ISDN to send voice, data and video over ordinary telephone lines simultaneously. An AT&T 5ESS™ switch at Illinois Bell will support digital phones, integrated voice/data terminals, facsimile, voice mail, host access and modem pooling, giving McDonald's a real competitive advantage in its data networking capabilities.

"In business language, this means we're going to do an even better job for the 30 million customers that we serve every day," said Bonnie Kos, McDonald's Vice President of Facilities and Systems.

"ISDN provides an information outlet to every workstation, thereby eliminating time-consuming and costly wiring, as well as enhancing messaging and network control capability."

Thanks to ISDN, McDonald's will enjoy better customer service, more current market information, better tracking of product promotions, more efficient inventory control, and reduced administrative workloads.

Ultimately, higher level applications of ISDN on the public switched network will replace most of the company's myriad networks, linking all its offices and restaurants around the world.

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**W**HEN a product is introduced, each programmer or analyst naturally asks himself, 'How will this product affect my job, and do I want to see it succeed?'

once checking and preacquisition homework, you can take the attitude, "This is the product we selected. We are committed to it, and we will make it work for us."

**Training.** Product training grows stale quickly. Only the staff using the product initially should be trained by the vendor at the time of installation. Training at the vendor's location eliminates distractions and helps build enthusiasm for the product. You can lay out a training schedule for the rest of the staff at the appropriate time.

**Support.** If necessary, establish a special support team or equip the development center to give assistance during the learning curve. Many firms fail to make full use of the vendor, who is often standing in the wings trying to figure out how to turn your organization into a prime reference account. Don't be afraid to call heavily on him as needed.

**First use.** A controlled first use of the product allows quills to surface and any adjustments to be made. Ideally, this first use should be in a modestly sized, noncritical application. Don't use the term "pilot project," as this implies that the organization is not yet committed to the product. If that is the message, it is all too easy for a few pessimists to find ways to make the product fail. Furthermore, this is not the time for benchmarks; the learning curve would skew the data.

**Evaluation.** Do benchmarks under controlled circumstances, when the learning curve is complete — six to 12 months after installation.

Organizations that follow these steps have been consistently able to avoid the shelfware syndrome. Shelfware is not only a waste of money, it is also evidence of a lack of leadership and planning.

With proper evaluation, a sound plan, reasonable expectations and unequivocal management commitment, organizations can count on benefiting from their investments in software development and maintenance productivity through automation. ■

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## TAKING CHARGE

David A. Ludlum

### An obstacle course for MIS



There are no big surprises in the ranking of critical MIS issues by information systems executives surveyed recently by the Index Group, located in Cambridge, Mass. Strategic concerns commonly discussed in the press and professional associations top the list. But responses to some questions about the issues provide some interesting insights into why they dominate the thoughts of senior MIS executives.

Index distributed the survey to readers of its newsletter and, the firm says, received more than 500 responses, slightly more than half of them from its highest ranking information systems manager at the respondent's organization.

The four top-rated issues are common strategic concerns of MIS executives: aligning MIS and corporate goals, MIS strategic planning, educating senior management on the potential of information systems and using systems for competitive advantage.

The next three issues deal with broad technical challenges: developing an information architecture, integrating systems and data utilization. The final three of the Top 10 are general management concerns facing systems executives: human resources, managing organizational changes caused by systems and funding the MIS organization.

#### Lack of understanding

Although aligning MIS and corporate goals seems like a natural choice for MIS managers' No. 1 concern, it doesn't appear to be a particularly difficult challenge. But just more than one-third of those responding suggested other ways when they disagreed with the statement that MIS professionals understand the business environment well, and they were accompanied by another third of the respondents who took a noncommittal stand on the question.

MIS strategic planning is similarly obvious as a critical issue.

Continued on page 60

## Hendry shakes up MIS

Coke exec wants staff to catch the wave of change

BY CHARLES BABCOCK  
ON STAFF

ATLANTA — At The Coca-Cola Co., William H. Hendry is described as someone with a laissez-faire management style, someone who does not impose his views on subordinates, someone who is even indifferent in the view of critics, with a different set of priorities.

At the same time, he is identified with the wave of change that has swept through the company, a wave that included the introduction of "New Coke" and an attitude that it was time to make things happen.

"If I were running a big company, I'd want him working for me, because he's very results-oriented. He doesn't get bogged down in analysis paralysis," says George R. Martin of George Martin Associates, Inc., a 16-person contract programming firm that works for Coca-Cola.

Hendry, 47, manager of corporate systems at Coca-Cola's headquarters here, attacked the gap between central data processing and users by moving eight members of his corporate information services staff from their department's sixth floor home into offices next to accountants and financial analysts.

#### No backlog

Under Hendry and a top corporate steering committee, the applications backlog has shrunk to a manageable list that is scheduled for development during a 12-month period. The schedule is adhered to so rigorously that Hendry says, "We don't have an

## PROFILE

William H. Hendry



**Position:** Manager of corporate systems, The Coca-Cola Co.  
**Education:** Learning the staff of leading staff members to work alongside users.

applications backlog."

At the same time, Hendry has overseen a 25% reduction in his staff. Not bad for someone with a reputation of a laissez-faire approach.

"Bill leaves each of his people alone," says Carol C. Austin, who describes herself and Hendry's three other group managers as very different types of people.

"I try to maintain a very enthusiastic, laid-back style," Hendry says with a quick, disarming smile that papers over that persona. His laid-back side sometimes strikes people as a lack of concern, he acknowledges. But at the same time, his enthusiasm for building ties to users has won him praise.

Continued on page 61

## SECTION 1706

### Independents' backs to the barricades

BY DAVID A. LUDLUM  
ON STAFF

With members of Congress back in Washington, the curtain has risen on the next act in the struggle by independent computer professionals to alter or overturn Section 1706 of the Tax Reform Act of 1986.

While MIS managers have had little difficulty addressing Section 1706, independent computer programmers, analysts and consultants promise to continue lobbying to amend or overturn the law, which has required many of them to become employees for federal tax purposes, impinging on their mobility.

One effort to ease the blow of 1706 will be led by the law's sponsor, Sen. Daniel P. Moynihan (D-N.Y.), according to Harvey Shulman, general counsel for the National Association of Computer Consultant Brokers and a partner with Washington, D.C., law firm Ginsburg, Feldman and Breen. "He thinks the IRS and the Treasury have done an inadequate job of carrying it out," Shulman says.

Moynihan's tax committee, Joseph Gale, has confirmed that the senator will propose legislation affecting Section 1706 as early as this week. Moynihan

will propose allowing technical services professionals and consultants to apply four or five clear-cut rules to determine, for tax purposes, whether they are employees or independent businessmen. Gale says. The rules would provide an option to the 20 common-law stan-



dards now in place, which many on both sides of the Section 1706 debate maintain are difficult to apply.

Gale says that some individuals who are not sure they can satisfy the test for independent status now would be able to do so under the new guidelines. "People are going to meet it who might have some questions under the last IRS ruling," he says.

Section 1706 denies technical service workers the "safe harbor" provisions that since 1976 had given independent

Continued on page 61

## MANAGERS ON THE MOVE

### DHL ships MIS exec to front line

DHL Worldwide Express is moving many corporate information systems activities into its U.S. operating unit, DHL Airways, Inc., and has appointed William H. Pigott vice-president of MIS at the Redwood City, Calif., subsidiary.

Pigott is an AT&T veteran and was formerly MIS director of Western Hemisphere field services at DHL Worldwide. In his new position, Pigott will manage systems for billing, tracking and tracing, customs brokerage and office automation.

He will also coordinate programs for MIS research and development and serve on the chairman's committee, the

firm's advisory group of senior executives.

"It's kind of ties in with a major reorganization and puts MIS in a very positive position, reporting directly to the CEO. It's the backbone of our business," Pigott said.

Among his challenges will be the deployment of a new package tracking and tracing system and a dozen others linked to it. The new system is to run on a Unix-based Pyramid Technology Corp. Model 8640 multiple parallel processing system, replacing a 5-year-old Stratus Computer, Inc. processor that Pigott said is "just fully overloaded."

Martin M. Diesendorf has been named assistant vice-president of Teuchocor Insurance and Annuity Association — College Retirement Equities Fund in New York.

In his new position, Diesendorf will be responsible for the design, development and implementation of computer systems for the association.

Before joining the firm in 1965 as a systems officer, Diesendorf was affiliated with International Service Systems.

Edward J. Quinn has been named vice-president of information services at Duchesneau Industries, Inc., located in

Emhurat, Ill.

Quinn began his career with Duchesneau in 1977 as manager of data processing for the firm's Chamberlain Manufacturing unit. Most recently, he served as director of management information services for Duchesneau.

Randy Burkhardt has been named vice-president of information resources management at Princeton House, Inc. in North Dighton, Mass. The firm is a Colgate-Palmolive Co. subsidiary that supplies crystal waxes.

Burkhardt joined Princeton House in 1984 as director of information resources management. Previously, Burkhardt was employed by The Kendall Co., Xerox Corp. and Mobile Chemical Co.

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## Ludlum

FROM PAGE 57

sue for top information systems executives, and the responses to the survey suggest that the area is similarly fraught with difficulty. Nearly 80% of all managers disagreed with the statement that strategic planning is primarily a question of choosing

a methodology.

Index officials comment that many of the firm's clients select aspects of various methodologies or use individual approaches.

### Obstacles

Again, few would discount the need to educate top managers regarding the role and potential of information systems, the No.

3 issue. But once more, there are several obstacles blocking the way.

More than half of the respondents agreed that education for senior managers now must be specific to their industry and business. But of much greater concern is the fact that less than one-fourth of those responding to the question agreed that their organization's managers have a

strong desire to learn about information systems.

Finally, getting down to the implementation phase, respondents indicated that the wildly popular strategy of using information systems to gain competitive advantage is difficult or even dangerous for them to pursue.

First, strategic systems seem difficult to identify, let

alone deploy. More than half the respondents disagreed that identifying them is easy and implementing them is the hard part, and only 14% said their organization has a special program for identifying competitive systems.

Second, two-thirds of the respondents agreed that competitive systems only increase the cost of doing business — not an outcome that many senior executives would relish in this age of rampant restructuring.

### Logjams

While it rounds up the usual suspects in ranking the most critical MIS issues, the survey also identifies some major logjams along the way to addressing them.

It also underlines a consistency among the top concerns of MIS managers in a variety of industries. "Managers who felt that these issues were not important should be aware that they are swimming against a strong current," according to Index.

The firm urges those who acknowledge the issues as critical to work together with colleagues in other firms and industries, in the hope that they will find they have much in common.

Ludlum is *Computerworld's* senior editor, management.



Actual unretouched photo.

## Screen stars with The Visible Edge.

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**1989 Data Security Conference.** New Orleans, Feb. 10-12 — Contact: Bank Administration Institute, 601 Grand Central, Rolling Meadows, IL 60068.

**Interac: Computing Management Symposium.** Anaheim, Calif., Feb. 10-12 — Contact: Interac Conference Department, 680 Alhambra Ave., Torrance, Calif. 90503.

## Independents

FROM PAGE 57

contractors in most fields the benefit of the doubt in questions of whether they were employees or legitimate independent businessmen for the purposes of federal income and employment taxes. Under the safe harbor, contractors could justify independent status on the basis of loose requirements, such as adherence to "standard industry practice."

Section 1706 was drafted by congressional staff members who were lobbied by officials of the National Technical Services Association, according to documents that Shulman obtained through the Freedom of Information Act and provided to *Computerworld*. The association's member companies generally employ salaried technical consultants and professionals.

As a result, since Jan. 1, 1987, technical service workers have had to bear the burden of proof that they are independent on the basis of the 20 common-law standards, which address the control a company has over its workers.

Among other effects, conversion from independent to employee status imposes income tax withholding on individuals and denies them income tax deductions for business expenses as well as relatively attractive Keogh retirement plans. Keogh plans are rough equivalents of individual Retirement Accounts for self-employed people.

The tax withholding and other requirements of Section 1706 impose administrative costs on agencies that place individuals in contract jobs. Independent con-

tractors and their brokers have also savaged the law for inhibiting efficiency and technology transfer and, thus, blunting American competitiveness.

The Senate approved Section 1706 in June 1986, but the action was virtually unnoticed until November of that year. Widespread confusion followed. The law addressed professionals placed in jobs with clients by a third party, such as a broker, but no one was sure whether it also applied to those who contracted directly with clients. The 20 standards seemed open to subjective interpretation.

"Initially, we really weren't cognizant of the potential ramifications of such an arrangement," says Jack Hines, an assistant vice-president in the Information Systems and Services Department at New York Life Insurance Co.

### IRS sheds some light

In January 1986, an outcry from independent professionals and brokers, the Internal Revenue Service issued guidelines stating that Section 1706 applies to relationships between independent professionals and their brokers but not to direct relationships between professionals and clients. The IRS also waived early payments of employers' taxes due as a result of Section 1706.

Last May, with confusion continuing, the IRS extended and broadened the waivers and issued guidelines that apply Section 1706 to three hypothetical cases. The guidelines have been criticized as unrealistic.

The response among MIS or consulting contractors has been to go to "better safe than sorry." Under the direction of legal

or human resources departments, many departments have avoided dealing with independent contractors — particularly those placed by third parties — or have ensured that the independents with whom they contract are someone's employees.

While Section 1706 does not explicitly impose a liability on the



Harvey Shulman

client if a worker placed by a broker is found to be improperly classified as an independent contractor, many companies are concerned they could be held liable. "It's my legal opinion that clients really are not at risk, but what the IRS has done is to create such confusion that it is very difficult to convince a client that they have no risk," Shulman, the brokers' attorney, says.

New York Life will now hire independent contractors placed by brokers, but the firm puts limitations in those contractors' agreements requiring the broker to take responsibility for the individuals' taxes, Hines says. The move has not hindered the company's ability to hire the contract workers it needs, he adds.

First Interstate Services Co., a data processing unit of First Interstate Bancorp in Torrance, Calif., is requiring contract workers to have a business tax identification number and be associated with an organization with more than one employee, according to Bill Murin, senior vice-president for human resources.

Independent contractors who worked for First Interstate have become employees of a broker or technical services firm or have set up their own business, depending on whether they could meet the common-law standards, Murin says. That has resulted in the company's loss of one or two out of roughly 50 of its former free-lancers, he adds.

### Beating the brunt

It has been independent computer professionals and their brokers who have borne the brunt of Section 1706.

Rusty Romaine of Silver Spring, Md., was an independent consultant from 1978 until last year, typically working on two to six contracts a year, he says. Romaine was halfway through a contract arranged by a broker to work for a telecommunications firm for six months when he got a letter Dec. 27, 1986, from the broker. It said he would have to become the broker's employee or produce payroll receipts from another company to continue working through the brokers placed.

Not wanting to give up his independence — along with business expense deductions and a Keogh plan — and claiming that his broker had breached the terms of his contract, Romaine relinquished the remaining three months of work, which he says was worth \$15,000. He did not

work steadily again until September 1987, when he negotiated a contract directly with a client through his own corporation. "It's a kind of hard to have the rug pulled out from underneath your feet," he says.

David Hicks, owner of Hicks and Associates in Lafayette, Calif., a broker of computer professionals, says he had to convert nearly half of the more than 100 professionals in his stable of contractors to employee status because of Section 1706.

As a result, Hicks says, he had to buy a payroll system and hire someone to manage payroll and contracts. "It's costing tens of thousands of dollars. My guess is my costs have gone up 10%," Hicks says. Over time, he claims, the costs will gradually be passed along to clients and, ultimately, to consumers.

In response to the outcry from brokers and representatives, several senators and House members have sponsored bills to postpone or repeal Section 1706 — including one House bill that attracted more than 100 cosponsors — but the bills failed to emerge from committee. A late effort by Majority Whip Dan Rostenkowski to amend Section 1706 died last year when leaders deferred tax revision proposals in order to deal with the budget deficit.

While supporters of Section 1706 contend that opposition is fading, backers say they will continue to push to amend, postpone or overturn the legislation. "It is going to heat up again. It's going to get very, very unpleasant," attorney Shulman says.

MIS managers seem likely to continue to take developments in stride. "I think it is keeping a lot of lawyers in business," New York Life's Hines says.

## Coke exec

FROM PAGE 57

"Bill is very outwardly focused toward servicing his users," says Christopher H. Hutchings, manager of corporate accounting. "His door is open. I can get to him pretty quick."

Before Hendry arrived at Coca-Cola, no one in the corporate information services group wanted to be the only person not on the sixth floor, Austin says. Now, the staff members are confident enough to work alongside users and not feel separated from their department, and "use us love it," she says.

### MIS blues

When he was hired four years ago, Hendry says, he heard his group's staff members say, "We don't have money. We don't have support. Nobody loves us. We can't do it."

He has worked at turning that perception around in two ways. Experience gained in previous

jobs convinced Hendry that a small staff can be leveraged in powerful ways, and he proceeded to reduce Coca-Cola's staff while upgrading the level at which it worked.

Tapping his experience as MIS director for auto parts supplier Federal-Mogul in Michigan, he turned things around partly by shifting much of the development burden to outside contractors. At any given time, about 65 contract personnel work alongside 15 Coca-Cola corporate information services employees. Instead of designing systems and writing code, a staff member today is more likely to function as a project manager.

Hendry's other major thrust was in accelerating a process already under way at Coca-Cola: off-loading as much of the corporate information services burden as possible to end users by training half the 1,400-member administrative staff to use Information Builders Inc.'s fourth-generation language, Focus. With the training, users are expected to provide maintenance

for their own analysis and reporting applications.

The letter step has left users both admiring Hendry's prowess and grateful over his sharing the work load. Although willing to listen to users, "he's also ready to suggest the user do something different," Hutchings says.

Hendry recounts how he once agreed to develop a system for a user in the presence of Coca-Cola's chief financial officer, Douglas Iwester, and how Iwester chided him that what his system would accomplish could be done by hand on the back of an envelope. "And he was right," Hendry says cheerfully. "I've been accused of trying to dump the work load on the end user, and I'm guilty."

With a country boy look and a lean, 6-foot-2-inch frame, Hendry seems like he might have stepped out of the Stone-wall Brigade, until he reveals that he is a native of Michigan and came west to take a job as development manager for Sangamo-Weston, Inc., a building supply subsidiary of Schlus-

berger Ltd.

He has managed to adjust to the change in climate. An avid golfer, he appreciates getting on the green for at least a day during January and February.

He also likes watching the Atlanta Hawks play basketball at the Omni arena and getting outdoors with his family on camping trips, although that activity has slackened as his two children have become teenagers.

### A manufacturer's high

Hendry also maintains an interest in the competitiveness of American manufacturing and recently read *The Reckoning*, a book by David Haberman about Ford's success. If he were not doing what he is, Hendry says, he would like to be in manufacturing management. "I get a kick out of making something. I can walk through a plant and get a really good feeling," he says. Between his jobs at Sangamo-Weston and Coca-Cola, he was a self-employed consultant in manufacturing software.

But behind Hendry's easygo-

ing exterior lies a native shrewdness that, in some situations, makes him a tough bargainer.

Once, while considering a large software company's \$100,000 package, Hendry heard out two salesmen and then had a contract drawn up listing the purchase price at \$90,000. The salesmen had been instructed not to discount the deal, but when they appeared with their district vice-president, Hendry pushed the signed contract across the table at him. As the salesmen went into their final pitches, the vice-president picked up the contract and headed for the door. When he reached it, he interrupted the salesmen to ask, "Are you coming, boys?"

"There's no list price in that business," Hendry says, flashing his Cheshire cat grin.

Despite such shrewdness, Hendry shows a simple brand of loyalty. His allegiance to Coca-Cola is so intense that, although he says he misses them, he refuses to say they are better than Frito-Lay because the company is owned by archival PepsiCo.

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# COMPUTER INDUSTRY

## INDUSTRY INSIGHT

Clinton Wilder

### Wall Street vs. the facts



In this election year, the computer industry's stock market activity is bearing out that time-honored maxim of presidential primaries: perceptions count more than facts.

In the New Hampshire Democratic primaries of both 1968 and 1972, the perceived winner of the primary was not the candidate who tallied the most votes. In those years, Eugene McCarthy and George McGovern, respectively, "won" by finishing second to Lyndon B. Johnson and Edmund Muskie but "exceeding expectations."

Now move the tape ahead to Friday, Jan. 8, 1988. Tandem Computers announced to the press and financial world that its December quarter had a glitch. Wall Street, which disdains bombshells as much as Gary Hart campaign loyalists do, took this as a red alert that the computer business, which burned investors in 1985, was headed down the tubes again.

The market was so nervous that even what appeared to be positive news about U.S. unemployment took on a negative spin on Wall Street. "We're back to

Continued on page 67

## IBM, AT&T chip in

Firms to share techniques with Sematech

BY ALAN ALPER  
OF STAFF

**NEW YORK** — In a rare example of IBM sharing technology, Sematech last week disclosed that advanced memory chip manufacturing processes developed by IBM and AT&T will be the first two technologies studied by the consortium's 13 member companies.

At a press conference here, Austin, Texas-based Sematech said IBM will contribute all manufacturing techniques used in its 4M-bit dynamic random-access memory CMOS device, which is currently under development, and that AT&T will provide processes used to make its 64K-bit static RAM chip.

Both companies, which are also expected to invest approximately \$8.5 million apiece in Sematech, will provide all manufacturing and engineering personnel required to expedite the technology transfer.

#### Picked from members

The two manufacturing processes were chosen from an undisclosed number of technologies offered by the 13 consortium members, according to Charles Spork, chairman of Sematech and president and chief executive officer of National Semiconductor Corp.

AT&T's process was selected because it can be quickly transferred to the consortium; IBM's process represents next-generation memory technology

that will further the research and development efforts of all Sematech members, Spork noted.

Production processes used to make both memory devices can be easily tested by the consortium, he added, and address the needs of high-, medium- and low-volume semiconductor makers.

**Generation of competition** "This is the starting point for the next generation of manufacturing processes," Spork said.

Providing consortium members with in-depth manufacturing know-how will ensure U.S. semiconductor industry competitiveness, Spork said. Knowledge gleaned from the R&D work can be used by member companies in manufacturing their own products, provided they receive approval from AT&T and IBM, he added.

AT&T and IBM said they contributed their technology because of benefits they expect to receive from joint R&D efforts.

William J. Warwick, president of AT&T's microelectronics division, said the technology transfer will eventually strengthen the entire semiconductor industry and provide his company with stable sources of supply. "We don't want to make all our own parts," he noted.

IBM executive Jack Kuebler said that despite Sematech's R&D work, his firm will continue to develop its 4M-bit RAM. "Results achieved by the consortium could help speed up our efforts," he said.

## Lotus, TI strut past '87; Hogan, AST staggering

BY JAMES DALY  
OF STAFF

**Lotus Development Corp.**, Texas Instruments, Inc. and Stratix Computer, Inc. led a parade of vendors that left 1987 in a wake of robust revenue and net income growth, according to quarterly results released last week.

Other companies notching gains in their most recent fiscal quarter included Apollo Computer, Inc., AT&T, Cry Research, Inc., Intergraph Corp. and Computer Sciences Corp. But Hogan Systems, Inc., Harris Corp. and AST Research, Inc. all reported mixed quarters (see chart below).

**Lotus.** After recently completing its first quarter with revenue in excess of \$100 million, Lotus tallied quarterly revenue of \$115.6 million, up 41% from the \$81.5 million recorded for the same quarter a year earlier.

**Net income for the Cambridge, Mass.-based software giant** was \$22.9 million, or 50 cents per share. This represented a 47% increase over the \$15.6 million, or 35 cents per share, recorded for the same quarter in 1986.

For 1987, Lotus had revenue of \$395.5 million, a 40% increase over its 1986 sales of \$282.9 million. Net income for the year was \$72 million, or

\$1.56 per share, a 49% increase over 1986's net income of \$48.3 million, or \$1.00 per share.

Much of the company's success can be tied to the sales growth of its best-selling products: 1-2-3, Symphony and Freelance Plus. "Sales of 1-2-3 and Symphony were up over 30%, which is much higher than most people were assuming they'd reach," said Bruce Johnston, an analyst with First Boston Corp. in New York. "This growth trend will continue, particularly this year, because 1-2-3 and Symphony will both receive major upgrades."

**TI.** The Dallas-based firm credited the recovery of the semiconductor industry — which for years had dogged the company with losses — and a 17% growth in its defense electronics business with spurring a quarterly revenue growth of 15%, to \$1.5 billion.

**Net income for TI's fourth quarter** came in at \$94 million, or \$1.05 per share, a 248% increase over the \$27 million, or 30 cents per share, recorded in the same period in 1986.

The computer maker notched a yearly revenue of \$5.59 billion, a 12% jump over 1986's \$4.97 billion. Net income for the year grew a whopping 965% and came in at \$309 million, or \$3.59

Continued on page 66

### 1987 fourth-quarter earnings

Strong sales ring up revenue growth, rising income for most industry vendors

AST Research	\$3	(46)	\$92.6	96
Bolt Bernequist and Newman	\$4.3	29	\$78.1	46
Cray Research	\$24.1	48	\$163.6	18
Computer Sciences	\$10.3	36	\$287.3	12
Harris	\$34.3	30	\$492.5	(6)
Hogan Systems*	\$1.9	(34)	\$12.1	11
Intergraph	\$94.7	27	\$196.3	34
Lotus	\$22.9	47	\$115.6	41
Manitex	\$5.2	(34)	\$74.1	46
Raytheon Computer Systems*	\$1.1	101	\$12.1	68
Stratix	\$6.6	77	\$65.9	58
Texas Instruments	\$94	248	\$1.56	15
Western Digital	\$6.3	(37)	\$100.7	40
Wyse Technology	\$7.4	65	\$128.1	75

\* Parentheses indicate losses

\* The income includes extraordinary items credit of \$91.4 million

\* The income includes extraordinary items credit of \$38.0 million

CP CHART

## Regrouped Sytek rolls up LAN sleeves

BY KATHY CHEN LEONG  
OF STAFF

**MOUNTAIN VIEW, Calif.** — After Sytek, Inc. endured a corporate reorganization and the layoff of 14% of its work force last June, the local-area network vendor went into a purposeful hibernation for six months.

Breaking the silence, Sytek President George Klaus told *Computerworld* recently that his company is planning to announce new products early this month that support networking standards and various cabling media.

The LAN vendor, which has traditionally supported only broadband cable, said that part of its goal is to provide hardware and software that tie its networks into wide-area networks



George Klaus

such as Digital Equipment Corp.'s Decnet and IBM's Systems Network Architecture.

"We have been working on all of this the last 18 months," Klaus said. "We are developing support for multiprotocols, large networking solutions and heterogeneous environments. We have

to do this so we don't lose momentum with our existing customer base."

More than 10 network wares are set to be part of the February lineup, including an Ethernet Transmission Control Protocol/Internet Protocol adapter card and cabling connection for the Sytek networks over twisted-pair wiring and fiber-optic cable.

"These are all hot areas to get into," observed Bruce Couchman, an industry analyst at Computer Intelligence, a La Jolla, Calif., market research firm. "In 1987, there was an increase in twisted-pair and baseband cabling. The fiber-optic connection has yet to take off."

The Sytek strategy focuses on selling to large-network customers, and Klaus said he be-

Continued on page 67

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## Lotus, TI

CONTINUED FROM PAGE 63

per share, compared with \$29 million, or 24 cents per share, recorded a year earlier.

"The semiconductor industry has experienced an upturn, and they're growing along with it," said Michael Gumpert, senior electronics analyst with Drexel Burnham Lambert, Inc.

Stratus. Avoiding the fourth-quarter earnings drop experienced by archival Tandem Computers, Inc., Stratus reported fourth-quarter revenue of \$55.2 million, up 56% from \$35.4 million. Net income was \$6.6 million, or 33 cents per share, up 77% from 1986's quarterly figure of \$3.7 million, or 19 cents per share.

The Marlboro, Mass.-based manufacturer also posted a 48% jump in revenue for the year, rising to \$184.2 million from 1986's \$124.6 million. Net income increased 43% to \$19.4 million, or 93 cents per share, compared with \$13.5 million, or 70 cents per share, recorded for 1986.

But analysts cautioned that although Stratus is not in trouble, its growth rate has slowed. "The growth figure is actually a deterioration from the 55% growth they showed a year earlier, 90% the year before that and 105% the year before that. I think that is a source of considerable concern to Stratus," said Omri Serlin, editor of the Los Altos, Calif.-based "FT Systems" newsletter.

"They don't want to be viewed only as a fault-tolerant systems supplier but as a broad-based on-line transaction processing systems supplier," Serlin added. "But the natural hunting ground for OLTP players is in the mainframe category, and that pitches them against IBM, which Stratus doesn't want to do." Stratus is the OEM supplier of IBM's System/88.

AT&T. The communications giant posted its highest quarterly revenue in two years, rising just less than 1% to \$8.60 billion from \$8.52 billion recorded for the same quarter a year earlier. Net income was \$96 million, or 48 cents per share, compared with a loss of \$1.17 billion, or \$1.11 per share, in the equivalent period in 1986.

Yearly revenue for the firm was \$33.59 billion, a decrease of 1% from the \$34.08 billion recorded in 1986. Net income for the year jumped more than 930% to \$2.04 billion, or \$1.88 per share, compared with \$139 million, or 5 cents per share, recorded for 1986.

Results in 1986, however, included charges of \$3.2 billion that reduced net income by \$1.7 billion, or \$1.59 per share. The charges resulted from various restructuring, a change in accounting for depreciation and a writedown of assets and inventory.

The company said sales of computers and business communications products were relatively stable compared with 1986, picking up momentum after a slow start in the first half of the year. Much of the earnings growth stemmed from AT&T's massive cost-cutting efforts.

Apollo. The Chelmsford, Mass., workstation pioneer rang up strong fourth-quarter results, as revenue of \$163 million exceeded year-earlier levels by 35% and profits nearly doubled to \$10.5 million, or 89 cents per share.

For the year, Apollo posted sales of \$553.7 million, up 41% from 1986 sales of \$391.7 million. Profits from operations more than tripled to \$28.2 million, or 78

cents per share, but net profit was \$6.5 million, or 18 cents per share less, because of a third-quarter charge for unauthorized foreign currency transactions.

Cray. The supercomputer maker posted quarterly revenue of \$183.6 million, an 18% rise over the \$138.2 million recorded for the like period a year earlier. Net income jumped 48% and doubled to \$34.1 million, or \$1.06 per share, compared with \$23.3 million, or 75 cents per share, recorded a year earlier.

Revenue for the year for the Minneapolis firm came in at \$687.3 million, a 15% increase over the \$596.7 million recorded for 1986. Net income for the year was \$147.1 million, or \$4.65 per share, compared with \$124.8 million, or \$3.99 per share, recorded for 1986.

Chairman and Chief Executive Officer John A. Rollwagen noted that the firm installed 55 computer systems during 1987: 43 new and 12 used systems.

AST Research. The maker of microcomputers and enhancements announced second-quarter revenue of \$92.6 million, a 96% jump over the \$47.1 million recorded in the same period a year earlier. But net income for the Irvine, Calif., manufacturer dropped 46% to \$2 million, or 17 cents per share, compared with \$3.7 million, or 32 cents per share, earned during the same period in 1986.

Hogan Systems. The Dallas-based banking application software firm's revenue grew 11% to \$12.1 million, up from \$10.9 million recorded for the same quarter in 1986. But net income dropped 34%

to \$1.9 million, or 13 cents per share, down from \$2.9 million, or 20 cents per share, containing Hogan's current slump. The net income included an extraordinary tax credit of \$914,000.

Hogan's revenue from sales of its software products took the most significant drop, falling 21% to \$3.3 million from \$4.2 million recorded for the same quarter in 1986.

Applied Data Research, Inc. The mainframe data base software house said it notched revenue for 1987 of \$172.9 million, which was 31% higher than 1986's results. Because the Princeton, N.J.-based firm is no longer a publicly traded company and is now a division of Ameritech, the firm was not obliged to release net income figures.



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**The Net Works™**

## Wilder

FROM PAGE 63

the good-news-is-bad-news syndrome," one market analyst says.

But for the computer industry, the worst ironies were yet to come. On Jan. 19, IBM announced that its frustrating two-year streak of declining earnings was over and that fourth-quarter profits were up 50% from 1986 levels.

Influential IBM stock watchers, however, saw things differently. Their revenue expectations were not met, and they saw IBM's real profit growth prospects, minus tax and currency boosts, as thin. Earnings estimates for 1988 were dropped, and IBM stock suffered a six-point price slide from which it has yet to recover.

The IBM effect quickly snowballed into a "get out of high tech" selling spree. While virtually every major computer vendor was reporting solid — in some cases, stellar — fourth-quarter results, their stock prices were taking it on the chin.

What, precisely, is going on here? Several analysts who don't share in the gloom and doom say the market paranoia stems from memories of 1985, when most investors ignored what turned out to be early slump warning signs. Not wanting to be caught again, investors in 1988 are ready to bail out of computer stocks at the first hint that something, somewhere, might be amiss.

But the vendors themselves appear to be drawing battle lines

against Wall Street for 1988. The fight is nothing new: many industry chief executives — Control Data's Bill Norris and Cullinet's John Collamore among them — have long lobbied for freedom from the tyranny of meeting quarterly financial goals.

Microsoft recently took it upon itself to issue a bullish microcomputer industry forecast

for the first six months of 1988; Apple followed suit last week. Both highly successful vendors want to reassure the investment community not only that each company's fundamentals are sound but that the market that will turn those fundamentals into profits is healthy.

Then there is Sterling Software. Top management of the Dallas-based systems software

house has apparently decided it doesn't want to deal with Wall Street at all; it will try to buy the company in a leveraged buy-out.

The investment community is understandably nervous about what computer stocks will do next; the industry's chief executives just want to be left alone to concentrate on profits, market share and long-term strate-

gies. In the wake of the crash, those two interests have never been more in conflict.

One thing is clear. The company that falls short of forecasts is certain to be branded a loser on Wall Street. When that happens, I'm sure Ed Muskie will be able to empathize.

Wilder is Computerworld's former editor, computer industry.



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## Sytek

FROM PAGE 63

lives the new products will give Sytek an entry into companies that would prefer not to use broadband cabling. Many Sytek users, such as Mountain Bell and General Motors Corp., have 500 to 1,000 connections on their Sytek LANs. Since its founding in 1979, the firm has attracted more than 1,000 customers and has attained more than 300,000 installed connections.

Klaus announced that if all goes well, the company will go public this summer. In 1984, Sytek filed a prospectus with the Securities and Exchange Commission but decided not to go public when IBM discontinued an OEM agreement that accounted for half of Sytek's revenue.

Users, in the meantime, say they are pleased that Sytek is finally listening. "Sytek used to be really shut-out supporting only their proprietary network," said one user at Eastman Kodak Co. who is evaluating the feasibility of expanding Kodak's Sytek 2000 network.

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# COMPUTER CAREERS

## Apple's Macintosh not just a toy

PCs making comeback as firms discover desktop's creativity, versatility

BY SALLY CUSACK  
OF STAFF



Don't disregard everything you learned on your old Macintosh; it could come in handy someday. Especially if you are looking for a career in microcomputer management or support. Or publishing. Or advertising. Or even graphic arts, for that matter. Familiarity with the Apple standard is slowly gaining recognition as a valuable skill.

"People using the Apple Macintosh tend to add a creative aspect to their work," says Rand Miller, programmer and consultant at Citizens National Bank in Henderson, Texas. "The product tends to look a little better and show a little more effort. It would definitely be a big plus for the work we are doing here."

Though interest in Apple Computer, Inc.'s products is growing, positions requiring Apple expertise are usually created after the systems are already installed throughout a company.

Support hard to come by "Support for the Apple Macintosh is a little outside the trend in corporate organizations," says Bill Storms, microcomputer center manager for the Washington

State Department of Transportation in Olympia. "It tends to arrive through the back door." Generally, there is slow growth in the volume of interest in the Macintosh, and MIS usually doesn't welcome the second standard the Mac may add to the shop, Storms says.

However, 80 Apple Macintosh Pluses are scattered throughout the department's divisions, serving several different functions. Fifty are used in the maintenance section, issuing weight and height permits for hauling on the road.

**Running the numbers** When headquarters distributes the district budgets, each district reworks the figures for bottom line coordination using a spreadsheet program on the Macintosh. The districts also use Macintosh to directly enter payroll information to the IBM mainframe via 3276 controllers.

Two additional positions have been added to the department since the Macintoshes arrived: computer information consultant and application trainer/data processing liaison.

"The closest Mac user is eventually gaining the passive approval of MIS," Storms says. At Citizens National Bank, the number of Macintosh com-

puters has grown in recent years from one to eight. Two Macintoshes are used as emulators, connected to an IBM System/38. The rest handle a variety of functions, including spreadsheet ap-

Personal Computer user," Miller says. "Because the Apple interface is so similar between packages, users are usually fluent in several software applications, such as data bases, word processing and spreadsheets."

Caterpillar, Inc., headquartered in East Peoria, Ill., brought in the Macintosh for desktop publishing a couple of years ago. "Initially, we were doing

and the company contracts with an outside desktop publishing consultant. The goal is to cross-train the staff in both areas.

"We see a fairly sizable impact in the Macintosh world," Meisell says, "and we are looking at installing Macintoshes in the advertising department. We need to develop skills to lead our corporate users in the right direction."

In the future, Meisell will be looking to employ someone not only with Apple expertise but with an additional background in all platforms of desktop publishing, including engineering and workstation technology.

### Standard acceptance

Despite the growth in Mac use at Caterpillar, corporate policy is to take advantage of the current IBM PC, and there is some reluctance to accept the Apple standard outside of special-purpose applications, Meisell says.

Not all corporations, however, struggle with second-standard acceptance. For example, Pat Natale, vice-president of auditing at Prudential Insurance Co. in Newark, N.J., says standards were not an issue when the company first installed its Macintoshes.

Natale is responsible for 355 auditors and end users at the company, which uses approximately 175 Macintoshes and 75 IBM PCs tied into an electronic mail system.

Could it be a researcher for Computerworld.

**"MACINTOSH USERS are more adept at a broader range of software than the traditional IBM Personal Computer user... [Mac] users are usually fluent in several software applications."**

RAND MILLER  
CITIZENS NATIONAL BANK

plications, forms design and off-line audits.

The bank also uses Macintoshes in its advertising department, expanding the functions into publishing.

**Savings achieved** This additional use was not planned, but Citizens National Bank began to realize a substantial savings from Apple technology.

The company is in the process of installing a signature card system, which will include a Macintosh at the drive-up teller window.

"Macintosh users are more adept at a broader range of software than the traditional IBM

desktop publishing on IBM PCs running DOS," says Jerry Meisell, publishing systems supervisor at Caterpillar. "But the graphic designers decided the Mac would be better for their work."

As a result of that recommendation, Caterpillar installed five Macintosh Plus computers and several Macintosh SEs.

Desktop publishing functions are shared between the IBMs and Apples. The company expects to connect the Macintoshes to IBM 8270-type controllers in the future.

Currently, there are no Apple experts on the Caterpillar staff. Instead, training is provided by the local Apple representative,

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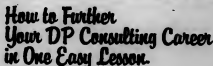
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In less than two decades we have grown from 5 to more than 7,500 "can do" employees around the globe. Our success is a result of teamwork, innovation and commitment to achieving the impossible. If you are ready for challenge, creativity and growth, explore your opportunities with Amdahl in one of the following areas:

## SYSTEMS SOFTWARE

**YOU CAN** "make" the kernel in 3 minutes! Use your 3+ years' development experience in UNIX\* and/or 370 operating systems to join our UITS\*\* development team as a manager or individual contributor in one of the following areas:

- UNIX Internals
  - Second Systems
  - Network Management Architectures
  - 4766/XL35 Support
  - Performance Measurement Tools
  - Online Transaction Processing
- Contact Bill McCarthy at (800) 538-8460, extension 9843 or send your resume.

## DESIGN AUTOMATION

**YOU CAN** develop strategic automated tools which take our mainframe designs from concept and verification through to manufacturing. Extensive design automation experience, including CLUNIX based technical skills and/or project management expertise, is essential for the following challenges:

- Manager, Physical Design Automation Development
- Senior Systems Programmers
- Systems Design Engineers
- Manager, Design Automation
- Product Manager, Processor Products Support

Contact Penell Durgan at (800) 538-8460, extension 6216 or send your resume.

## PRODUCT TECHNOLOGY

**YOU CAN** make significant contributions to the design of our custom test systems by utilizing your 5+ years of system logic design or your 3+ years of software design development experience with high level languages.

- Software Engineer (UNIX & "C" required)
- Hardware Engineer (ECL a plus)

Contact Penell Durgan at (800) 538-8460, extension 6216 or send your resume.

## HARDWARE DESIGN

**YOU CAN** use your 3+ years mainframe experience, with emphasis on channel subsystems development, to guide the evolution of future processors. Previous work with 370 compatible channels, channel algorithm design, and/or microcode desirable.

- I/O Design Engineer
  - CPU Design Engineer
- Contact Judy Goodson at (800) 538-8460, extension 7689 or send your resume.

## OPERATING SYSTEMS DEVELOPMENT

**YOU CAN** play a vital role in creating leading-edge systems software which interacts closely with our hardware at the kernel level. Technical excellence and/or management experience in 370/Assembler systems software development is essential. Use your background in 370/XA architecture and MVS or VM Internals to pursue these opportunities:

- Manager, Macrocode Development
- Systems Programmer, Processor Simulation
- Senior Systems Programmer, Macrocode Development
- Manager, Operating System

Contact Susan Reakin at (800) 538-8460, extension 6191 or send your resume.

## SOFTWARE QUALITY ASSURANCE

**YOU CAN** enjoy variety, gain technical breadth, and have a direct influence on our products by designing and executing mainframe software test procedures. Your background should include large-scale systems integration and test experience. 370/XA Assembler is also highly desirable for the following:

- Manager, Test Tools Development
- Systems Programmer, Software Validation

Contact Susan Reakin at (800) 538-8460, extension 6191 or send your resume.

**YOU CAN** join in the excitement of creating the computer systems of the future, while you enjoy the benefits and competitive salary you would expect from an industry leader.

**YOU CAN** send your resume to: Amdahl Corporation, Employment Department, Department 2-3, P.O. Box 3470, M/S 300, Sunnyvale, California 94088-3470. Principals only, please.

Amdahl Corporation is proud to be an equal opportunity employer through affirmative action.

\* UNIX is a registered trademark of AT&T  
\*\* UITS is a trademark of Amdahl Corporation

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Because of its high technology base, virtually every type of computing environment and computer position exists. With a strong economy, many new and some of the most prestigious firms throughout the area have retained Source 103 to help identify skilled computer professionals. They offer very generous salaries and benefits. Many of our West Coast clients will assume all expenses involved in interviewing and subsequent relocation.

You'll also find that opportunities for recreational and cultural pursuits are just as plentiful. The area is rich in water sports, skiing, tennis, golf—museums, theaters, universities and historic landmarks.

To find out more about any position listed below—or others you might like to hear about—call Dave Grinnell toll-free day or night at 1-800-533-4200, extension 103. There's no cost or obligation to you and your inquiry will be held in strict confidence.

If unable to call, write: Dave Grinnell, Source 103, Department 7571, San Mateo, CA 94402-7571. (When writing, please include your position title).

## Southern California

**Adp Auditor (36-42)** International distribution company seeks a Senior Adp Auditor opportunity in the field of state systems development. His cycle will be 100% business conference. CNA highly preferred. Position benefits most advantageous. See #44,496.

**Accounting/Systems Development (36-42)** Excellent opportunity with an Orange County-based manufacturing company. Will be responsible for handling and maintaining manufacturing system. Solid understanding of a variety of manufacturing programs. See #44,496.

**Sales Representative (36-42)** Orange County-based office of a nationally recognized consulting firm seeks sales professionals with a proven track record associated with the processing organization. A degree and five or more years experience are required. Salary is \$100,000. See #44,496.

**Senior Programmer (36-42)** Orange County-based financial organization will be handling CICS. There are many years of systems development experience in an IBM data base environment. See #44,496.

**Programmer—Multiple Openings (36-42)** Consulting firm has design openings for Programmers: VB/C++, VB, VB/C, or C/C++. Experience: A variety of interesting assignments are available. See #44,496.

**Senior Consultant (36-45)** CNA is seeking a Senior Consultant with strong systems development experience in state-of-the-art hardware environments. See #44,496.

**Senior Programmer (36-47)** National distribution firm based in Orange County seeks a professional with strong development experience in an IBM MVS/CICS environment. Free trial in computer. See #44,496.

**Project Manager (36-48)** Consulting Group/Contract company seeks a data processing manager with project leadership experience. Will be responsible for all data processing activities related to the design and programming of systems. See #44,496.

**VB/C++ Programmer (36-48)** Three years VB/C++ system program design experience. Some VB/C++ contract position. See #44,496.

**Programmer/Analyst (36-48)** General consulting firm seeks a professional with strong VB/C++ and System 360 experience to assist in the development of client systems. See #44,496.

**VB/C++ Programmer (36-48)** Will design and support experience in systems development. See #44,496.

**VB/C++ Programmer (36-48)** Excellent opportunity for growth in a VB/C++ environment. Lots of excellent challenge. See #44,496.

**Business Systems Analyst (36-48)** Responsibilities include conceive new business systems development and VB/C++ technology. Will interface with client and/or VP and plan and implement. See #44,496.

**VB/C++ Programmer—Senior Working (36-47)** Join a senior development office in the entertainment industry and conduct your technical skills. See #44,496.

**Systems Analyst (36-48)** Strong working knowledge systems implementation experience needed specifically VB/C++ and CICS. See #44,496.

**Director of MVS/360—General (36-48)** CNA/CSC/IBM design needs a manager to support the design of all applications. See #44,496.

**Assembly Language Programmer (36-48)** Will develop utility based system for an IBM environment. Contract position. See #44,496.

**CICS Programmer/Analyst (37-48)** Will design financial institution with a professional with CICS skills to support a major retail card system. Will work directly with client. Knowledge of JCL, COBOL, and CICS. See #44,496.

**Communications/Systems Specialist (36-48)** Will develop VB/C++ and CICS applications. Will be responsible for the design and development of all applications. Will be responsible for the design and development of all applications. Will be responsible for the design and development of all applications. See #44,496.

**Systems Analyst—Business Systems (36-48)** Will develop, test, and support all data submitted and their supporting software and data systems. Programming experience in the IBM, MVS, or VT series environments. Knowledge of JCL, COBOL, FORTRAN, and ALGOL. See #44,496.

**VB/C++ Programmer (37-48)** Will design and develop a professional with VB/C++ experience to handle products. Has been knowledge of IBM, MVS, CICS, VS/C, or C/C++ or previous data base skills. This is a contract position to grow into a system programming position. See #44,496.

**IBM Data Base Design Specialist (37-48)** In the newly created position, you will support IBM and be responsible for the design and development of all data base systems. Will be responsible for the design and development of all data base systems. Will be responsible for the design and development of all data base systems. See #44,496.

**Senior IBM Systems Analyst (37-48)** Will design and develop a professional with IBM experience to handle products. Has been knowledge of IBM, MVS, CICS, VS/C, or C/C++ or previous data base skills. This is a contract position to grow into a system programming position. See #44,496.

**PC Programmer/Analyst (37-48)** Will be responsible for the design and development of all applications. Will be responsible for the design and development of all applications. Will be responsible for the design and development of all applications. See #44,496.

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**Senior Programmer/Analyst—Data Base Management (37-48)** Will design and develop a professional with VB/C++ experience to handle products. Has been knowledge of IBM, MVS, CICS, VS/C, or C/C++ or previous data base skills. This is a contract position to grow into a system programming position. See #44,496.

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## Washington

**Senior Systems Analyst (36-48)** Excellent offer of a well-established consulting firm is expanding its staff to add to the company's data base management experience. Will be responsible for the design and development of all data base systems. Will be responsible for the design and development of all data base systems. See #44,496.

**Senior Programmer/Analyst (36-48)** Will design and develop a professional with VB/C++ experience to handle products. Has been knowledge of IBM, MVS, CICS, VS/C, or C/C++ or previous data base skills. This is a contract position to grow into a system programming position. See #44,496.

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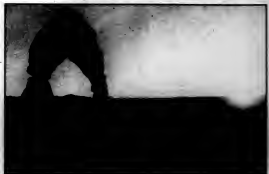
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If you like the outdoors, you'll love it here. Because living in the Salt Lake City area means wide-deep powder skiing just minutes from home. It means world class hiking, biking, camping or fishing in one of Utah's admirably preserved national parks or wilderness areas. But if you think Salt Lake City takes a backseat to the cultural and technological advancements of the times, you've seen too many seasons.

Because today's Salt Lake City is a thriving, sophisticated metropolis—with significant advantages over other major cities. Unemployment here is incredibly low. Housing costs 22% less than the national average. And Salt Lake City's economic development rivals the healthiest cities in the country.

If you're a top UNIX programmer, the Salt Lake City good life reflects just half of a great opportunity. The other half is Unisys—a company that has steadily combined the resources of an information industry giant with an action-oriented entrepreneurial spirit.

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Positions require a strong UNIX background (UNIX V internals preferred) and demonstrated experience within a UNIX environment in product support, porting, or development in at least one of the following areas:

**Comptrollers:** COBOL, Fortran, Pascal, C, Basic, ADA, or RPG (e.g., Micro Focus, Ryan McManis, LPA, SVS).

## And You're Wrong.

**Data Base:** Relational data base managers, file access methods, or distributed data base technology (e.g., Oracle, Unisys, Ingres).  
**Secure UNIX:** Increased security development for UNIX, experience with "Orange Book" and/or National Computer Security Center.

### Operating Systems

Requires a strong background in UNIX operating systems and experience in "C", product development and UNIX internals experience is desirable.

### Data Communications

Qualifications include a UNIX and "C" background, knowledge of device drivers, and experience in one or more of the following: async/sync, host communications, (e.g., IBM, Sperry, Burroughs), LAN's, and wide area networks (FDDI/DON) including TP-4, TCP/IP protocols, or ISO/OSI standards.

### Communications

You'll design, code, test, and document communications software running on MS-DOS or Unisys DCP/Telcom network systems. Requirements include a BS/MS in Computer Science for equivalent education/training, and five years of related work experience. Knowledge of MS-DOS, "C" language and communications protocol development is desirable (e.g., TCP/IP protocols, LAN interface or OSI Transport).

Explore the Unisys/Salt Lake City good life. Please send your resume, indicating your area of interest, to Unisys Corporation, Professional Employment Dept. 1A, Building C, 322 North 2250 West, Salt Lake City, Utah 84116. An equal opportunity employer.

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# UNISYS

## DATA BASE ANALYST SYSTEMS PROGRAMMER

the HARDWARE/SOFTWARE: 3090, 3081, 4381, MVS/XA, TS01/SPF, IMS DB/DC, DB2, QMF, ADP/11, COBOL 11  
 the APPLICATIONS: law enforcement, courts, property assessments and tax collection, social services, health, payroll, and many more

the LOCATIONS: San Bernardino, California, one of the fastest growing areas in the country; affordable housing; close to the mountains, the desert, and the beach

the PACKAGE: \$37K to \$47K per year (depending on experience) plus a complete flexible benefit package including retirement.

**DATA BASE ANALYST:** data base design and analysis in the IMS DB/DC and DB2 environments; systems development support

**SYSTEMS PROGRAMMER:** systems software installation and maintenance using SMP/E; performance monitoring and tuning; computer operations and technical systems support

If you have at least one year of experience performing data base design, analysis, and maintenance functions in an IMS DB/DC environment or performing systems software installation and maintenance in an MVS/XA environment and would like to become part of this progressive organization, we want to talk with you. Contact:

Kristine Smith  
 San Bernardino County Personnel  
 157 West Fifth Street  
 San Bernardino, California 92415-0440  
 (714) 387-5994

## Ada PROGRAMMERS: Do You Rank In The Top Ten?

Planning Research Corporation (PRC) has assembled a top flight team of computer professionals at our Houston facility and we have a very specific need for the top ten Ada programmers in the country. We need your talent and experience in the development of the Space Station Software Support Environment, a fully capable Ada system. PRC is responsible for the implementation of the precise control, database management, communications, and real-time reporting functions for the first U.S. "software factory" which is being used to develop flight and ground software for the Space Station Program. You will be developing an environment which operates VME (VME), IBM (VME), Apollo, Realtime, Macintosh II and IBM PC/XT computers, using local and wide area networks (TCP/IP and L2S).

This is your chance to get in on the ground floor of an exciting long term project that will affect the way software is developed in this country. In order to qualify for a spot on our team, you must have at least 7 years' experience in software engineering and at least 3 years' experience in Ada programming. You must have a track record of top notch performance.

If you are up to the challenge, send your resume in confidence to: Barbara Prosser, Director, Alt. 34, Planning Research Corporation, Government Information Systems, 1155 Gessard Avenue, Houston, TX 77061. An Equal Opportunity Employer M/F/H/V.

PRC

Planning Research Corporation  
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## COMPUTER SALES PROFESSIONALS SYSTEMS ANALYSTS

The Plexus extended Data Processing (DPP) product line has received tremendous marketplace acceptance. This success, combined with current technical opportunities, has necessitated a dramatic sales expansion. Plexus currently has nation-wide openings for experienced Sales Professionals and Systems Analysts:

•Atlanta	•Los Angeles	•Boston	•New York
•Chicago	•Orlando	•Dallas	•Princeton, NJ
•Detroit	•S.F. Bay Area	•Houston	•Toronto
	•Denver	•Washington, DC	

**SALES PROFESSIONALS** should have a minimum of 10 years experience in selling large database computer systems and should be knowledgeable in system justification, proposal preparation, and system acceptance. Successful candidates will also have substantial "sales-driven" selling experience. Experience in selling in major accounts in the geographical area is mandatory. Desirable experience includes knowledge of UNIX and image management systems.

**SYSTEMS ANALYSTS** should have a minimum of 7 years experience with large relational database systems for a computer manufacturer. Other mandatory experience includes customer pre-sales work, proposal preparation, and presentation skills. Knowledge of UNIX database, large system data capture and database installation and support experience preferred as is "document" processing experience including data capture techniques. These positions require self-starter initiative and the desire to seek in an independent field office environment.

Please offer qualified candidates excellent salaries (including an aggressive commission plan), benefits, and employee stock purchase plan. For a confidential review of your qualifications, forward your resume to: Personnel Employment, Plexus Computers, 3833 Mt. First St., San Jose, CA 95134. We are an equal opportunity employer. Principals only, please.

# PLEXUS



# MARKETPLACE

## IBM: Smoke and fire

PC XT prices fall as new units enter market; AT demand, prices strong

BY ELIZABETH LOZANO  
EDITOR, COMPUTER EXCHANGE CORP.

IBM Personal Computer XT models took a dramatic price tumble in the week ended Jan. 22 as the release of more new units into the marketplace pushed prices lower.

The PC XT Model 086 closed down, at \$1,325, while the XT Model 089 fell to \$1,675. The Model 089 remains a hot commodity, fueling the strength of DOS. DOS is taking on a new meaning as an acronym for "Don't Own Slowly."

While the Model 089 was on fire, the PC AT Model 339 was smoking. The Model 339 experienced an increase in demand as large volume vaporware supply stimulated resellers and users alike. On Jan. 22, the Model 339 was trading at \$3,625.

In other IBM news, the PC Convertible, which has been the focus of laptop rumors for several months, is currently crossing

an exporters' panic.

The PC Convertible has not been a strong seller in either the primary or the secondary market. Any new Intel Corp. 80286 and 80386-based laptops from IBM are going to have to be more impressive than the "Portable Pansy." In addition, IBM is going to need a foothold in the laptop market, if it is truly going to be in touch with tomorrow.

Compaq smoothsiders Compaq Computer Corp. trading was smoldering this week in comparison to IBM's fire. The Portable I closed up marginally, at \$725, representing one of the least expensive ways to get a portable. The Portable II, in contrast, closed down, at \$1,700, as power portable users upgrade to smaller and faster models. The Portable III closed up, at \$2,875, in the face of tight supply conditions and steady demand.

Desktop 286 sales were strong throughout the week of

Jan. 18. The Desktop 286, which features 640K-byte random-access memory, an amber monitor and a 20M-byte hard drive, closed up \$25, at \$2,300.

Desktop 386 demand continues to rule the 386 DOS world. The Desktop 386 closed even at \$4,375, with single-unit transactions favoring trading.

Apple's Aliva and well Apple Computer, Inc. trading was heavy this week, as users and resellers shared their excitement about the long overdue formal alliance between Apple and Digital Equipment Corp. "The complete acceptance of the Macintosh into the corporate world is just around the corner," one reseller remarked. Another said, "This should make a booming market in both Apple and DEC gear."

Apple's 512E closed down, at \$975, experiencing a decrease in single unit demand. The Mac Plus closed even at \$1,300,

## The BoCoEx Index

Closing prices report for the week ending Jan. 22, 1988



INFORMATION PROVIDED BY THE BOSTON COMPUTER EXCHANGE CORP.

struggling to maintain its value in the face of diminishing demand. The phones continue to ring off the hook for Mac II and Mac SE units. Supply is tight for used models, and new stock

prices for the Mac II and the Mac SE are competitive.

The Boston Computer Exchange can be reached at 800-BOCOEXX, or 617-542-4414 in Massachusetts.

## Withdrawal of upgrades spurs 4381 price drops

BY SUSAN GANNON  
INTERNATIONAL DATA CORP.

On Dec. 15, IBM withdrew upgrades from the 4381 Models 1, 2 and 3 to the Models 11, 12, 13 and 14. It was these attractively priced upgrades that falsely held up values on the original 4381s.

Used market prices have fallen to reflect the withdrawal of the upgrades of the Model 11, 12, 13 and 14 machines. The 4381-M1 was trading for \$163,000 (44% of list price) at the end of October and has fallen to \$138,000. Retail values for a 4381 P2 in October were 34% of list price, or \$190,000, and are now 28%, or \$154,765. A 4381 P3 is currently available for 33%

of list price, or \$276,618.

Last month, IBM announced that volume shipments of 4381 Model Groups would be available immediately and said 4381 Models 23 and 24 will ship in March.

International Data Corp. has heard that some users participated in an incentive program whereby they took an interim Model 11, 12, 13 or 14 machine with the understanding that they would receive an upgrade to a Model 21, 22, 23 or 24 in the fourth quarter. If this is true, IBM must realize that its customers will be wary of similar programs in the future.

For more information, call IDC's Terri LeBlanc at (617) 872-8200.

## Many factors lead to fall of 3083

BY SANDRA IAPOLLA  
INTERNATIONAL DATA CORP.

The IBM 3081, 3083 and 3084 machine is on the decline, with values falling off 20% or more from year-end 1987 prices.

This drop can be attributed to a combination of factors, including an increasing supply of these machines as a result of lease expirations and IBM's 3090 sales push, a diminishing demand as MIS managers stall hardware acquisitions while they wait for the 3090 F series announcement and the increasing supply of used 3090 machines with which lessors must contend.

The value for the 3083 Model E now lies primarily in memory and channels. Used prices for the Model E have dropped to less than \$100,000. The larger uniprocessor 3083 Model J continues to hold fairly steady, having dropped approximately \$80,000 since last November. Dollar value differences between the 3083 Model JX and 3083 Model J— as well as other 3083 models—are approximately \$25,000.

IBM 3081 Model K and 3084 Model Q machines are readily

## IBM mainframes — 30 series

Current fair retail market value

	Date shipped	MIPS*	List price	Percent of market value
3083 Model J	1Q 1988	7.5	\$2,685,721	12
3081 Model K	2Q 1982	13.5	\$3,940,731	13
3084 Model Q	4Q 1982	34.3	\$4,691,662	18
3090 Model 300	August 1985	27.2	\$4,584,900	73

\* Millions of instructions per second

INFORMATION PROVIDED BY INTERNATIONAL DATA CORP. CY CRAFT

available, with a substantial number of leases set to expire in the second quarter of this year.

These lease expirations, in conjunction with yet another 3090 announcement, will put increasing downward pressure on used 3081, 3083 and 3084 values this year. It is expected that the 3090 hardware and software enhancements will finally offer a meaningful differentiation between the 3090 and the 3081, 3083 and 3084 families.

In the meantime, IBM is doing a tremendous job of controlling the 3090 market. Aggressive on-site test allowances, deferred payments, extended warranties, increased Volume Procurement Amendment credits and reduced software and engineering support have all been reported.

The end result of IBM's sales effort is that a number of 3090 machines are available on the

secondary market. It is not uncommon to have some machine availability at this point, but the supply of some machines is greater than normal.

The market value of a Model 200 is determined by the list price of the newer Model 300E, accounting for the basic differentiating features between the two machines. Sales incentives put the retail and wholesale used prices for the Model 300 at approximately 73% and 70%, respectively.

The price of 3090 models other than the E models will once again have to drop to compete against the new F machines, which offer improved price/performance, and the 3090 Model E boxes, which will be more readily available on the secondary market this year.

For more information, call IDC's Terri LeBlanc at (617) 872-8200.

## IBM mainframes — 4381s

Current fair retail market value

	Date shipped	MIPS*	List price	Percent of market value
4381 M1	2Q 1984	2.1	\$373,121	37
4381 P3	4Q 1983	2.8	\$652,731	38
4381 P2	3Q 1985	4.7	\$928,321	39
4381 P13	April 1986	3.7	\$447,731	58

\* Millions of instructions per second

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## Training

# On-site training touted as cost cutter

BY NANCY  
BLUMENSTALK MINGUS  
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Although the type of technical training provided by MIS organizations varies depending on the firm's needs, many managers find on-site programs more cost-effective than programs conducted by contractors at outside locations.

"For programmers, we find that the combination of courses from Deltak and a supplemental reading list that we developed is a more economical way to provide training than sending them out to school," says Ed Culliton, manager of information systems at Acme Electric Corp. in Cuba, N.Y.

The cost of a seminar and travel expenses are often too high for managers to justify sending the bulk of their staff members for technical training. For example, mainframe-based training provided by an independent contractor on-site can cost about \$4,000 for a class of 10 to 12 people. The same type of course held off-site by a vendor costs about \$1,500 per person for one week of training.

Despite the economic issues, some professionals prefer off-site courses. "We have people who think that we are doing them a disservice by not sending them away for training, but there are pros and cons to that," Culliton says.

## Electronic training

Many organizations contract with vendors such as ASI/Deltak in Naperville, Ill., and use video and computer-based training (CBT) courses largely as introductory material.

Video and CBT courses are also used to teach operating system concepts, especially in organizations that are going through conversions. Some training vendors offer special one-year IBM MVS conversion video and CBT

## training packages.

These courses permit companies to provide access to conceptual material without signing a long-term contract with a vendor.

For example, Moog, Inc., an East Aurora, N.Y.-based aerospace company, uses leased CBT courses for end-user conversion training. The company recently implemented a CBT program to train more than 200 IBM VM users on how to use MVS.

"We didn't have anyone available in-house who was qualified to do the training," says Joe Brun, information center supervisor. "Because we had a large number of people to train, classroom training was too burdensome and too expensive. Logistically, it was easier for people to do it on their own," he adds.

## Shellware

Off-the-shelf training packages don't work in all cases. "In the personal computer environment, if people are not particularly familiar with computers, they get confused by [video] programs from vendors," Culliton says.

Acme's documentation specialist is currently teaching PC courses on a part-time basis.

Some managers go a step further, designing their own training programs to more closely address their individual needs. However, others are able to implement customized courses with the help of a vendor.

"Ninety percent of our training is done through contract," says Bob Hofstadter, manager of education development at Exxon Corp. in New York. "We have a senior computer education administrator who works with external contractors to design a program which is specifically geared towards our learning objectives."

Blumenstark Mingus is a free-lance writer based in Bethesda, N.Y.

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UNIX System Fundamentals for New Programmers	January 6-5 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	January 13-5 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	January 27-28 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	0380
UNIX System Fundamentals for Programmers	January 13-5 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	January 13-5 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	January 13-5 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	0380
Shell as a Command Language	January 13-5 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	January 13-5 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	January 13-5 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	0380
Shell Programming	January 13-5 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	January 13-5 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	January 13-5 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	0380
Using Advanced UNIX System Commands	January 13-5 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	January 13-5 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	January 13-5 February 2-4 March 14-5 April 1-4 May 1-4 June 1-4 July 1-4 August 1-4 September 1-4 October 1-4 November 1-4 December 1-4	0380
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## February 15 COMPUTERWORLD Training Section

What percentage of the MIS budget is allocated for training? How do managers justify training expenditures?

Turn to the Training section of COMPUTERWORLD's February 1 issue for an interesting editorial feature addressing this and other questions. Call for more information.

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FEBRUARY 1 1963



## Ashton-Tate takes graphics gauntlet

Package will joust with Lotus's Freelance Plus on the desk top

BY STEPHEN JONES  
OF STAFF

SAN FRANCISCO — Ashton-Tate Corp. last week again challenged rival Lotus Development Corp., introducing a desktop presentation package that it goes head-to-head with Lotus's popular Freelance Plus.

The \$495 desktop presentation package, called Draw Appliance, is the first new graphics product from Ashton-Tate's joint venture with Decision Resources, Inc. It comes more than a year after Ashton-Tate acquired the business graphics software developer.

Draw Appliance is positioned as a high-end addition to Ashton-Tate's existing Master Graphics series, which was also developed by Decision Resources. While Master Graphics was designed for Intel Corp. 8086-based personal computers, Draw Appliance runs on Intel 80286- and 80386-based systems.

The package requires 640K bytes of random-access memory and an IBM Enhanced Graphics Adapter card. Although Draw Appliance can be operated from a keyboard or a mouse, one beta-tester user said it was "literally designed with a mouse in mind."

The vendor claimed that Draw Appliance can exchange files with other PC and mainframe graphics programs that are written in Computer Graphics Metafile code.

Those programs include Freelance Plus, Software Publishing Corp.'s Harvard Graphics and Corel Corporation's Interact, Inc.'s mainframe Tell-A-Graph package.

### All the goodies

Draw Appliance features text editing, color gradations and a library of 125 color images.

"The product hits state-of-the-art status right out of the blocks, which hasn't always happened with Ashton-Tate," said

Brian Muter, a PC software consultant who attended the announcement here.

Users gave the product high marks for its easy-to-use interface. Philip Abrams, executive vice-president of Princeton Venture Research, Inc. in Princeton, N.J., said he was able to get the product up and running even though the initial beta-test version he received came with no documentation.

But Frank West, the developer who wrote most of the program for Decision Resources and Ashton-Tate, said the product's high-end capabilities might be intimidating for first-time users. West is vice-president of Tigard, Ore.-based Communication Dynamics, Inc., which originally sold the program to Decision Resources.

Ashton-Tate also said it will reduce the price of Presentation Pack, incorporating the Master Graphics series in one package, from \$595 to \$495.

"That's biting off a big chunk. I can easily see that as the hold-up," said Tasker, who used CICS as an MIS director.

Version 2.1, however, was supposed to be available in the fourth quarter without ERF features, according to IBM's Feb. 17, 1987, announcement of the upgrade. Tasker also pointed out that IBM's CICS development resources are limited and that the firm has committed itself to providing CICS under VM for the \$370 mid-range processor.

Tasker said IBM faced a choice between disappointing CICS users with a six-month or longer delay or holding back the sales of its \$970 for lack of CICS under VM.

Berry R. Christian of On-Line Documentation, Inc., a Yorba Linda, Calif., firm that produces a CICS remote-screen access product, said IBM must be having problems producing a 31-bit mode version of CICS to work with existing 24-bit CICS applications, disregarding ERF complexities.

a region of MVS memory devoted to temporary storage of data and transactions until they can be routed through the CPU for processing or along communications lines to users.

"It's not like IBM to defer a major, strategic product, one that participates in Systems Application Architecture," said Robert P. Tasker, director of computing research at The Yankee Group in Boston.

He speculated that IBM has been forced to delay delivery due to the continuing technical challenge of moving CICS into 31-bit mode operation.

Version 2.1 was also supposed to incorporate Extended Recovery Facility (ERF), which would dynamically switch users on a crashing CICS system to a backup system without loss of transactions or data.

work underscored DEC's recent statement of direction [C.W. Jan. 25] supporting open systems and international standards.

Access to the VM and DOS/VSE operating systems was introduced under Decnet's Systems Application Architecture.

The turnkey gateway reportedly allows users to exchange information bidirectionally and share resources between DEC systems in a Decnet environment and MVS, VM and

DOS/VSE systems in an IBM Systems Network Architecture (SNA) environment.

Functions supported include terminal emulation, file transfer, mail and document exchange and the ability to create distributed applications. The gateway works between DEC and IBM systems. Other features of the Decnet/SNA Gateway include the support for IBM's CICS/VS, IMS/VS, MVS/XA, MVS/SP,

## Bells' ONA plans ring false to some

BY MITCH BETTS  
OF STAFF

WASHINGTON, D.C. — Several regional Bell holding companies last week announced Open Network Architecture (ONA) plans that could provide corporate managers with new flexibility in designing and managing data networks in the 1990s.

Nynex Corp., for example, said it will provide trunkline access to the local exchange office, a service it has been offering to a small number of private networks as tiered services.

However, network managers expressed disappointment that the Bell companies have refused to offer transport services independent of switching services, according to Henry D. Levine, an attorney for the Committee of Corporate Telecommunications Users and several financial services companies.

"The failure to unbundle transport imposes enormous direct costs on major data networks," Levine said, because it requires users to buy switching services that they do not need from the Bell companies.

### Explain yourself

The Federal Communications Commission required AT&T and the Bell holding companies to file by today ONA plans that explain how they will unbundle their telecommunications services and offer the individual "basic service elements" to enhanced service providers — such as electronic mail and data base services — and to end users.

The FCC will accept public comments on the plans through April 8 and is expected to approve the ONA plans this fall. The services would start rolling out one year later at prices set in state tariffs, according to ONA plans reviewed last week.

In essence, ONA is supposed to allow network managers to pick and choose the basic service elements they want from the

Bell operating companies. For instance, several users reportedly plan to purchase the Automatic Number Identification feature, which would improve computer security by immediately identifying anyone who dials into a data base.

In many cases, the Bell holding companies simply unbundled the features of their existing Centrex, packet and private-line services. "No one expected substantial technical redesign of the network in the plans. It's too soon," Levine said, noting that more advanced features are expected in the future.

But Levine said there are a few promising services announced in the initial ONA plans, including the trunkline access service to be offered by Nynex.

Charles F. Welton, staff director of ONA marketing for Nynex Service Co. in White Plains, N.Y., said several New York banks have expressed interest in the service.

However, users groups said they are upset that the ONA model developed jointly by the Bell holding companies does not separate the basic service elements from the Bell companies' end-to-end services. Under the model, ONA's basic service elements are only options to be added on top of the underlying service, called a basic service arrangement.

Levine charged that the Bell companies' ONA framework is in direct conflict with the FCC's order to unbundle the basic building blocks of the local network.

"Even under the best scheme, there are some new services that may be very valuable," Levine said. "The problem is that we'll never see the real potential for an unbundled, open network."

Under the FCC rules that established ONA, the Bell companies must provide enhanced service providers and users with equal access to the local exchange network.

## Facility glitch suspect as CICS/MVS upgrade delayed

BY CHARLES BARBOCK  
OF STAFF

RYE BROOK, N.Y. — IBM said last week that delivery of Version 2.1 of CICS/MVS, formerly scheduled for the fourth quarter of 1987, has been deferred indefinitely.

CICS customers will have to wait until the second quarter of this year to learn when it is likely to be shipped.

"IBM needs additional time to complete implementation of the requirements on this product," said a spokesman for the IBM Information Systems Group in Rye Brook, N.Y.

Version 2.1 would provide common storage area relief for MVS/XA users by moving the CICS subsystem above the 16MB-byte file that limits MVS/SP users. The common storage area is

## DEC ups support for IBM software

BY PATRICIA KEEFE  
OF STAFF

WASHINGTON, D.C. — Further extending its reach into the IBM office, Digital Equipment Corp. last week announced support for IBM's Professional Office System (Profs), CMS Notes mail software and VM and DOS/VSE operating systems.

The announcements at the Communication Networks '88 exposition, or Connet, here last

week underscored DEC's recent statement of direction [C.W. Jan. 25] supporting open systems and international standards.

Access to the VM and DOS/VSE operating systems was introduced under Decnet's Systems Application Architecture.

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DOS/VSE systems in an IBM Systems Network Architecture (SNA) environment.

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ACF/VTAM and ACF/PSN systems.

The ability to monitor status information relative to the Decnet/SNA Gateway and SNA.

Available now, Decnet/SNA Gateway V1.4 costs \$16,500.

The electronic mail gateway is the newest component of DEC's Mailbox product family. DEC already provides gateway software for IBM's Profs or CMS Notes mail and DEC's mail users. MCI Communications Corp.'s MCI Mail, CITT X.400 systems and DEC's VAX Message Router/Gateway Version 1.0 for IBM's Systems Network Ar-

chitecture Distribution Services and Personal Services/Distributed Office Support System mail users.

Available in March, VAX Message Router/Gateway V1.0 is a VAX/VMS layered software said to support the exchange of messages and revisable and final form documents between IBM's Profs or CMS Notes mail and DEC's mail users.

Prices for the Message Router/Gateway range from \$1,500 for the Vaxstation II to \$3,000 for a Microvax 2000 to \$36,000 for the VAX 8800.

## Shake-up

FROM PAGE 1

headquarters here last week. "This structure will create more entrepreneurship, accountability and independence in our five business units."

Industry analysts say they were intrigued by the separation of the 9370 from IBM's other mid-range machine, the System/36. Some characterized the move as IBM's realization that companies purchasing the 9370 come from a mainframe mid-set and are more interested in distributing applications throughout their organizations than in building a so-called mid-range computer.

The move to disperse various product lines in semiautonomous units surprised some MIS executives, who said they are more concerned that IBM reconcile its incompatible products. "For someone like me, there's just too much need to transcend all those different systems," said IBM's Eton, vice-president of information systems at Levi Strauss & Co. "I want to buy a single solution."

### Potential confusion

The MIS manager at a large Dallas site agreed. "There's a potential confusion in the mind of the customer," the manager said. "It looks like we're going back to the old days of GSD and DPD [the General Systems and Data Processing Divisions], and there you had two different product lines competing with each other."

Akers said the company felt that with the forthcoming split of System/36 and 38 announce-

ments—including Silverside, the long-rumored successor to the System/36 and 38—the architecture needed its own business unit.

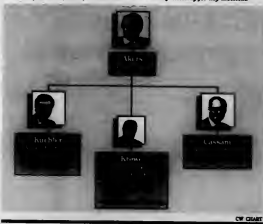
The firm's evolving Systems Application Architecture (SAA) is expected to provide consistent user interfaces, programs and communications links to IBM's three primary architectures. Yet it will take a long time to develop, analysts said, citing the decade of work IBM invested in making its Systems Network Architecture a standard. Akers called that incompatibility "yesterday's problem."

IBM established a new entity, IBM United States, to oversee the five business units. The group is headed by Senior Vice-President Terry R. Lautenbach (see story page 1). Also reporting to Lautenbach is IBM's U.S. Marketing and Services Group, formerly called the Information Systems Group. In addition, the company elevated Executive Vice-Presidents Kasper Cassani and Jack Kuebler to the position of vice-chairman of the board and gave both men broad oversight responsibilities.

Cassani, who continues to oversee IBM's World Trade Asia/Pacific Group and World Trade Americas Group, will serve as review executive for IBM's worldwide marketing and services. Kuebler, who headed the Federal Systems Division and was a member of the management committee, will oversee the Enterprise Systems and

### Powers that be

IBM charges three of its top executives with review responsibility for key divisions



CW CHART

Technology Products units and will hold overall review responsibility for IBM United States. However, Akers, who was promoted to executive vice-president, was named review executive for the Personal Systems, Application Business Systems and Communication Systems units.

Akers said the reorganization is a continuation of moves made by IBM to streamline its operations and shift personnel from corporate staff positions to marketing, sales, service and engineering posts. IBM, which adheres to a lifetime employment philosophy, has reduced its worldwide work force by 15,000 during the last two years and deployed more than 20,000 em-

ployees, Akers said.

"This is a major decentralization, a major delegation of authority," Akers stressed. "In some cases, we now have several integrated IBM companies instead of one computer and communications company."

IBM watchers and analysts agreed with the intent of the reorganization but said they are not sure a decentralized structure will enable IBM to cut costs and speed product delivery cycles. Decentralization could create more bureaucracy and even add operational costs, some said.

"When was the last time a company decentralized and cut costs and people?" asked Donald Haback, an analyst at The Nikko Securities Co. in New York.

"Centralization allows you to get on top of people."

Ulick Weil, a 16-year IBM employee and 12-year Big Blue watcher, said the new structure could be a morale builder for the company but might increase IBM's already bloated bureaucracy. "When you go to decentralization, the review executives will need staffs to interact with the different business units," he said. "Before you know it, you have staff, staff, staff, and costs escalate."

Akers said that because of IBM's size, the impact of the reorganization might not be felt for years to come. "The decisions we make sometimes do not pay off for four, five or eight years," he said.

Analysts speculated that IBM's overseas operations would be the next area to be redesigned, since they have remained relatively unaffected by the recent moves.

While some analysts speculated that the reorganization positioned Lautenbach as a possible successor to Akers, others contended that the situation remains hazy.

Some IBM watchers said they had expected Akers to appoint a successor by naming a president or chief operating officer to share the corporate mantle. Vice-Chairmen Kuebler and Cassani are not believed to be in the running because they are 55 and 59, respectively.

Midwest correspondent Joan S. Boeman contributed to this report.

## Lautenbach

FROM PAGE 1

tions, both international and domestic. For the past two years, Lautenbach has devoted his energies to one of IBM's weakest and most critical areas: communications.

"For 15 years, IBM talked about mass communications, but it wasn't until he took over that they climbed off the IBM soup-

box with ISDN, OSI and recognizing that DEC is around," said Bob Dwyer, president of Amers Research in Phoenix.

Lautenbach took over the newly formed Communication Products Division (CPD) in November 1985 and one year later became vice-president of the Information Systems and Communications Group, which comprised the CPD and the Entry Systems Division. Perhaps his best credential for executive ad-

vancement is the diversity of areas he has managed at the firm.

"When you look at the business lines reporting to him, he has experience across almost all of those product areas," said Frank Dmbeck, president of Communication Network Architects, a consulting firm in Washington, D.C.

A former IBM colleague said Lautenbach has a keen mind for understanding the complexity of IBM's business. "Intellect was



Terry R. Lautenbach

one of Terry's greatest assets," said Thomas J. Fraser, a 17-year IBM sales employee who worked for Lautenbach in the Data Processing Division.

Fraser, now president of Computer Equipment Leasing in Fort Washington, N.Y., recalled Lautenbach saying intellect was the quality he considered most important for an IBM executive.

"And he was one of the better examples of that," Fraser said. "When you think of the number of skills they have to display—understanding the relationship of one technology to another, doing business in 100 different

countries—it boggles the mind."

An Ohio native, Lautenbach joined IBM's Cincinnati office in 1959 shortly after graduating with a physics degree from Xavier University in the same city. He climbed the marketing rungs within the Data Processing Division for 17 years and reached the division presidency in 1976.

Two years later, at the age of 40, Lautenbach became president of IBM World Trade America/Far East Corp., which earned him a spot on the board of directors. He achieved a vice-president's title in 1980 and became IBM's vice-president of marketing in 1984.

Last week's promotion propelled Lautenbach to the top of the list of potential successors to Akers, according to some analysts. "Lautenbach is now the important line executive, the profit-and-loss guy," said International Data Corp. analyst Jack Hart, a 20-year IBM veteran. "It's that function that has traditionally moved into the president's seat and the chief executive's job."

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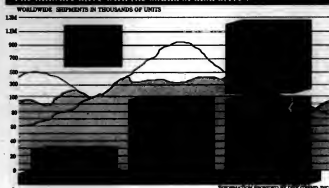
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## TRENDS

## Optical disk drives

The hills are alive with the sound of disk drives



The promise of optical disks is set to become a reality by 1990, with sales soaring as users invest in erasable disks and migrate on-line applications.

Work by research firms shows a booming optical market. Disk/Trend, Inc., a Mountain View, Calif.-based research firm, and Peripheral Strategies, Inc. in Santa Barbara, Calif., are tracking the growth and the changing image of optical storage.

Disk/Trend said worldwide shipments of optical disk drives climbed from 31,700 in 1986 to 99,600 in 1987 and that they will reach 1.2 million in 1990.

Disk/Trend also forecast that revenue from those shipments will rise from \$203 million to \$1.4 billion.

While use of optical disks is increasing, there is a shift in the types of optical units in use. The drives most in demand in 1986 were read/write drives that utilized capacities larger than 1G byte.

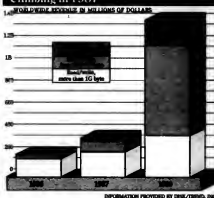
These drives will continue to be popular. But the boom areas will be read/write disks holding less than 1G byte and read-only disks, both of which are expected to attain dominant positions in 1990.

In looking at how erasable disks will be used in 1990, Peripheral Strategies said 55% will be used as fixed magnetic disks are now, for primary mass storage, and that 25% will be used for document storage.

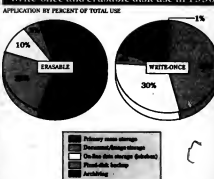
Write-once optical disks are more likely to be used for document and image storage and on-line jukebox-style storage in 1990, Peripheral Strategies added.

JAMES CONNOLLY

## Climbing in 1987



## Write-once and erasable disk use in 1990



## INSIDE LINES

Branching out. Cullinet plans to release a version of its IDMS data base management system for Unix soon, with initial availability on the Sun Microsystems platform. Cullinet wouldn't specify a delivery date, but a senior official said the IDMS will be "moved to market very quickly."

Reach out and stroke someone. AT&T last week tried to appease a group of Unix vendors that have protested its alliance with Sun Microsystems. "We have met with representatives of companies who requested this meeting, and... we reiterated our commitment to maintain Unix System V as an open system," AT&T said. Some of the reps, however, weren't satisfied with AT&T's words. "The meeting was positive in that there was a discussion," said Mark Hatch, marketing manager for software products at Apollo Computer. "But many of us walked away even more concerned." Hatch said competing vendors are upset that "Sun is now claiming it just about owns Unix."

Giving us Dypeek. Viewers of a pre-beta-test version of Ashton-Tate's long-awaited Dbase IV say the product looks like it will be "extremely competitive in the marketplace," with superior implementations of SQL and Query By Example. Those sources expect to get beta-test copies in the next two or three weeks and a formal announcement in the next 60 days. Meanwhile, speculation was hot and heavy last week that Ashton-Tate will announce the acquisition of a high-end three-dimensional spreadsheet for Apple's Macintosh Feb. 10. The company is also reportedly close to wrapping up a deal on a high-end word processor for the Mac.

Tease herbaceous flavored. Compaq will announce its version of OS/2 in New York Feb. 17, according to one source. Sources say it will have several major applications developers present to demonstrate their products under Compaq's version.

Back in black. CDC, which teetered on the edge of a Chapter 11 filing in 1986, last week reported its first full-year profit since 1984. Although revenue was virtually flat at \$3.36 million, CDC earned \$19.3 million, or 45 cents per share, compared with a \$264.5 million loss in 1986. CDC turned a profit despite one-time charges totaling \$44.3 million, about half of which covered the anticipated cost of replacing its faulty FSD-II disk drives.

Seek advice of counsel. A press release recently announced the \$4.2 million sale of the high-technology coatings division of Wobtech Corp. — the New York firm whose illegally awarded defense contracts resulted in the conviction of former White House aide Michael Deaver and the investigation of Attorney General Edwin Meese. But don't look for the Mount Vernon, N.Y.-based buyer to be diversifying into the computer business — at least not until it changes its name from Vapor Technologies, Inc.

Super status. Wisconsin and Illinois are throwing money and tax incentives at computer designer Steve Chen, each hoping to be the state in which he builds his supercomputer. Both states have reportedly been told that Chen's start-up, Supercomputer Systems, could grow from its current 45 employees to 1,000 or 2,000 in five years. That would rival the size of Chen's former company, Cray Research.

They kept their word. Double sales to reach \$100 million by the end of 1987, the Wordperfect team was told by President Alan Ashton and Vice-President Pete Peterson, and we'll send you all to Hawaii for a vacation. The team pulled together and topped the \$1 million mark on New Year's eve, just hours before ringing in 1988. Each employee and a spouse or relative can now go to Hawaii gratis for one week.

Hold onto those 3-D glasses. What was cited as a missing link when DEC announced its Vaxstation 3300 and 3500 in September seems ready to appear tomorrow, when DEC and Evans & Sutherland plan to announce a high-end three-dimensional graphics workstation in Boston. Analysts who have said the Vaxstation seems competitive with workstations offered by rivals Sun and Apollo did so with the caveat that DEC lacked high-performance graphics capabilities.

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